SUPPLEMENT.

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE:

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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No. 2144.—VOL. XLVI. LONDON, SATURDAY, SEPTEMBER 23, 1876. PRICE (WITH THE JOURNAL) SIXPENCE. PER ANNUM, BY POST, £1 4s.

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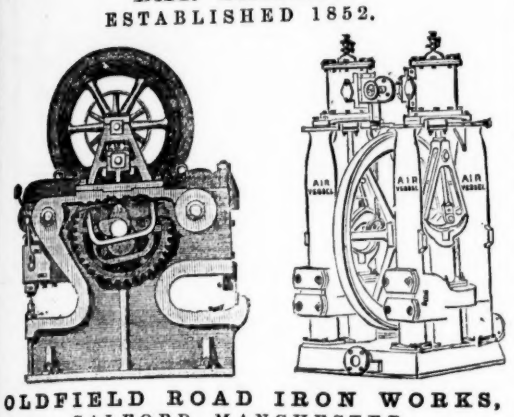

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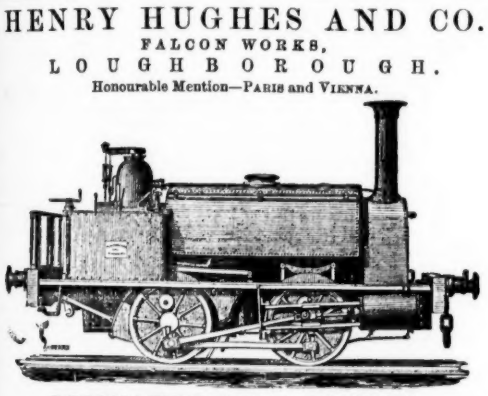

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The prices of castings vary according to the pattern, the quantity required, and the alloy used.

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PARIS, BRONZE MEDAL, 1867.

ORDER OF THE CROWN OF PRUSSIA.

FALMOUTH, SILVER MEDAL, 1867.

A DIPLOMA—HIGHEST OF ALL AWARDS—given by the Geographical Congress, Paris, 1875—M. Favre, Contractor, having exhibited the McKean Drill alone as the MODEL BORING MACHINE for the ST. GOTHARD TUNNEL.

SILVER MEDAL of the Highland and West of Scotland Agricultural Society, 1875—HIGHEST AWARD.

At the south end of the St. Gothard Tunnel, where

THE McKEAN ROCK DRILLS

Are exclusively used, the advance made during eight consecutive weeks, ending February 7, was 24·90, 27·60, 24·80, 26·10, 28·30, 27·10, 28·40, 28·70 metres. Total advance of south heading during January was 121·30 metres, or 133 yards.

In a series of comparative trials made at the St. Gothard Tunnel, the McKean Rock Drill continued to work until the pressure was reduced to one-half atmosphere (7½ lbs.), showing almost the entire motive force to be available for the blow against the rock—a result of itself indicating many advantages.

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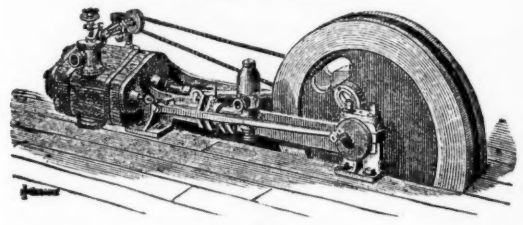

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CATALOGUES & ESTIMATES ON APPLICATION

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4.—THEY ARE THE ONLY MACHINES THAT MAKE THE ORE CLEAN FOR MARKET AT ONE OPERATION.

They have been supplied to some of the principal mines in the United Kingdom and abroad—viz.,

The Greenside Mines, Patterdale, Cumberland; London Lead Company's Mines Darlington, Colberry, Nanthead, and Bollyhope; the Stonecroft and Greyside Mines, Hexham, Northumberland; Wanlockhead Mines, Abington, Scotland (the Duke of Buccleuch's); Bewick Partners, Haydon Bridge; the Old Darren, Esgairmwyn, and Ystumtuen Mines, in Cardiganshire; Mr. Beaumont's W.B. Mines, Darlington; also Mr. Sewell, for Argentiferous Copper Mines, Peru; the Bratsberg Copper Mines, Norway, and Mines in Italy, Germany, United States of America, and Australia, from all of whom certificates of the complete efficiency of the system can be had.

WASTE HEAPS, consisting of refuse chats and skimpings of a former washing, containing a mixture of lead, blende, and sulphur, DRESSED TO A PROFIT.

Mr. BAINBRIDGE, C.E., of the London Company's Mines, Middleton-in-Teesdale, by Darlington, writing on the 20th March, 1876, says—"The yearly profit on our Nanthead waste heaps amounted last year to £600, besides the machinery being occupied for some months in dressing ore-stuff from the mines. Of course, if it had been wholly engaged in dressing wastes our returns would have been greater; but it is giving us every satisfaction, and bringing the waste heaps into profitable use, which would otherwise remain dormant."

Mr. T. B. STEWART, Manager of the Duke of Buccleuch's Mines, Wanlockhead, Abington, N.B., writing on 20th March, 1876, says—"I have much pleasure in stating that a full and superior set of your Ore Dressing Machinery has been at work at these mines for fully a month, and each day as the moving parts become smoother, and those in charge understand the working of the machinery better, it gives increasing satisfaction, the ore being dressed more quickly, cheaply, and satisfactorily than by any other method."

Mr. BAINBRIDGE, speaking of machinery supplied Colberry Mines, says—"Your machinery saves fully one-half on old wages, and vastly more on the wages we have now to pay. Over and above the saving in cost is the saving in ore, which is not much short of 10 per cent."

GREENSIDE MINE COMPANY, Patterdale, near Penrith, say—"The separation which they make is complete."

Mr. MONTAGUE BEALE says—"It will separate ore, however close the mechanical mixture, in such a way as no other machines can do."

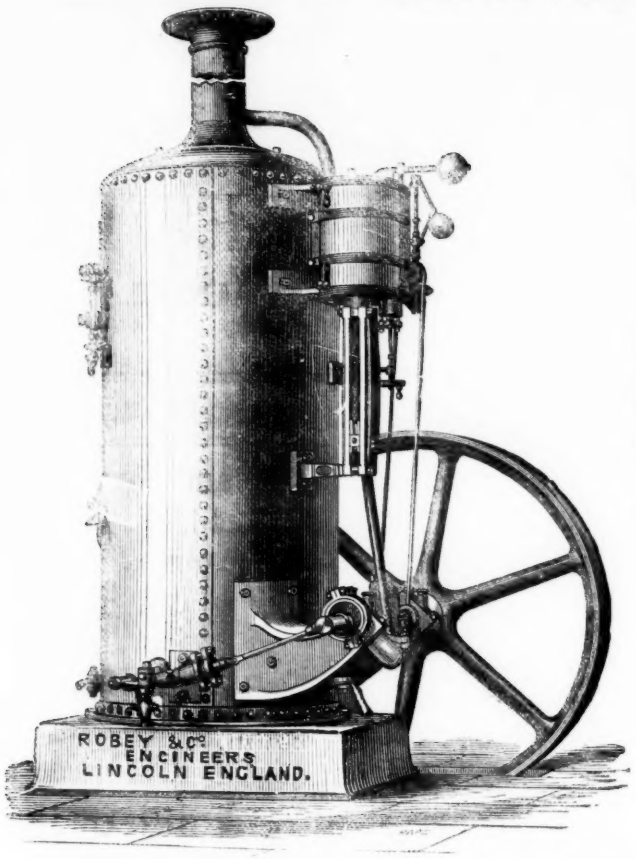
Mr. C. DODSWORTH says—"It is the very best for the purpose and will do for any kind of metallic ores—the very thing so long needed for dressing-floors."

Drawings, specifications, and estimates will be forwarded on application to—

GEORGE GREEN, M.E., ABERYSTWITH, SOUTH WALES.

Patent No. 4136 - - - - - - Dated 16th December, 1873.
Patent No. 4150 - - - - - - Dated 17th December, 1873.

IMPROVED VERTICAL STEAM ENGINES AND PATENT BOILER COMBINED.



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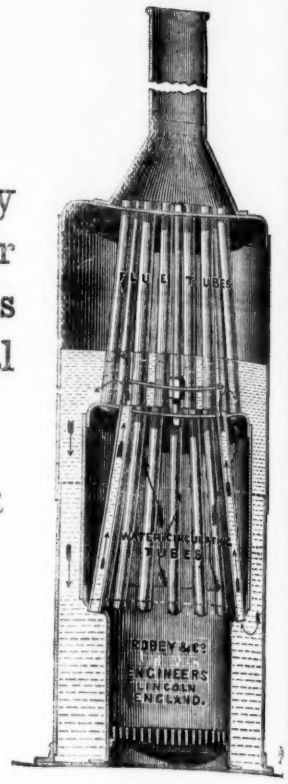

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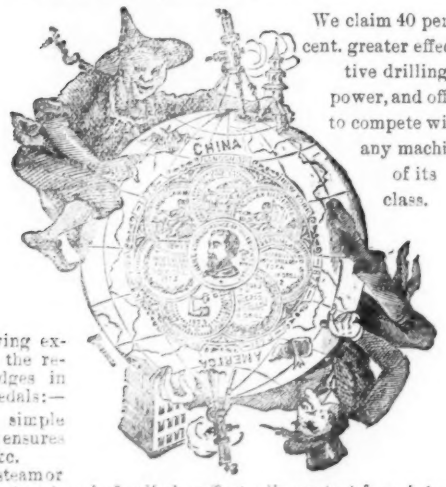

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"2. Its simple construction ensures durability. &c.

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"5. Its having an automatic feed, giving it a steady motion, &c.

"6. Its greater steadiness and absence of jar and vibration experienced in other drills, which is very destructive to their working parts, &c.

"7. Its greater power is some FORTY PER CENT. in favour of the Ingersoll."

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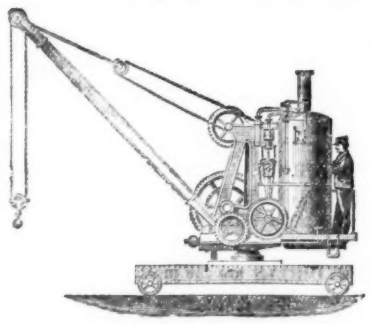
CHAPLIN'S PATENT STEAM ENGINES AND BOILERS,

PRIZE MEDAL, INTERNATIONAL EXHIBITION, 1862.



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To hoist 15 cwts. to 30 tons.

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NOTICE.—These Sections are Registered.

Original Correspondence.

MINING IN QUEENSLAND.

SIR,—The quantity of tin received and forwarded at the Warwick Railway Terminus during the past months were as follows:—

	Stream tin.				Ingot tin.		Total.			
May ...Tons	297	19	1	7	... —	.....Tons	297	19	1	7
June.....	242	0	0	8	... —	.....	242	0	0	8
Total.....Tons	539	19	1	15	... —	.....Tons	539	19	1	15

Showing a decrease of 152 tons stream tin on May and June, 1875. The receipts for the past quarter were 857 tons, showing a decrease on the same quarter last year of 220 tons; and the receipts for the past half-year were 1898 tons, showing a decrease of 258 tons of stream tin. The above figures show that the continued low price of tin in London has at last affected the supply, although to a very inconsiderable extent as yet. A more remarkable fact is disclosed that no ingot tin has come down during the past two months; smelting on the field has turned out a failure, and all the furnaces are drawn and the men dismissed. The total yield I hope to be able to give your readers by next mail, and until then you are unable to draw any conclusion from the above figures, as the quantities of stream tin forwarded by the other two routes to the coast may be very much in excess of last year, or very much less, and until I get the actual figures I have nothing trustworthy to guide me. The news of a rise of 2*l.* per ton in Australian ingots in London on June 20, and received to-day, has somewhat strengthened the tone of this market, and little as it is will improve matters at the mine very much. The fact is that, owing to the interruption of the cable between Australia and India during the past three months, no news of the state of the market has been received that was not a month old, and as these only advised increasing stocks and lower prices mail after mail all dealing in the metal ceased, and producers have had to hold and ship themselves, taking what advances they could get from the banks on ingots. The repair of the cable which is earnestly looked for every day will immediately rectify this. In copper during the last two or three months there has been considerable activity, and I calculate that our export of this metal will double itself this year. I hear of some large contracts for the supply of antimony ore by the Neardie and other antimony mines to Melbourne smelters. So soon as I have particulars I will advise fully.

The northern gold fields are turning out better than ever anticipated, the reefs in many districts are proving enormously rich; machinery is being hastily got on the ground, and capitalists after visiting the several districts are going in fearlessly. The future of the North of Queensland is hard to foretell. One drawback is the Chinese. Thousands of these people are arriving like a flock of locusts, and settle on a spot abandoned by the British digger, there they work like ants, till every bit of gold is washed out, when they start for another abandoned spot. This will go on amicably enough so long as our diggers are finding *new ground*, and abandoning partially worked-out ground for "John," but when the discoveries of of new ground cease "John" must either clear out of the North or encroach on the ground occupied by the white diggers; this latter will end in bloodshed, without doubt, and the Goverment are now anxiously considering the best to be done under the circumstances.

I am glad to be able to report that our coal mining is assuming large proportions, although as yet for local supply only. We have the best gas coal in the southern hemisphere in this colony, but it requires railway or tramway to export it. RESIDENT.

Brisbane, July 14.

MINING IN CORSICA.

SIR,—Under this heading, in last week's Journal, I notice a few remarks in reference to some of the mines reported upon by Her Majesty's Consul, the first the writer refers to being the Linquizetta. He says he believes it was not suspended for want of ore; this I can substantiate, as I was the first to commence operations under the English association, and if they had been governed by my advice large profits would have been the result—in fact, I could guarantee to pay 12,000*l.* per annum profit with a capital of only 6000*l.* The two other mines referred to were purchased by the South Aurora Company—one is a silver-lead and the other a copper mine. Consul Shortt says that these will have to surmount great difficulty in the transportation of the minerals. I am sorry to say he has been misinformed respecting this. As I had the pleasure of being the first to commence operations upon these two mines also, I have the best means of ascertaining the exact cost of transport; consequently, in order that the shareholders and others may not be misguided, I will give the exact expense. The cost per ton from the silver-lead mine to the shipping port of Bastia is 15*s.* This important property embraces 20 square miles, with a vast number of lodes running through the same, one of which was producing full 4 tons per fathom only about 4 fms. from surface the last time I saw it. The Olmeta Copper Mine is 10 square miles in extent, in which two large lodes are known to exist, containing copper ore in large quantities—in fact, one of these lodes is full 60 ft. wide. My strong opinion is by sinking a few fathoms upon this lode an immense quantity of copper ore would be obtained. The contract for the delivery of the ore from this mine to the shipping port is only 5*s.* per ton, and no difficulty would be met with in obtaining carriers at this price up to any amount of tons. From my own knowledge of these mines I have no hesitation in saying that if properly managed I am fully convinced they cannot fail to pay very large profits, and in a short time.

Southport, Sept. 20. JAMES RICHARDS.

ST. JOHN DEL REY MINING COMPANY.

SIR,—Are we to presume from Mr. Gordon's reasoning, as reported in the Journal of July 1 as having been laid before the meeting of the shareholders held on June 28, that all difficulties as to labour have been got over; and if so, is it by means of slave labour contracts, which are repugnant to the English ideas of what is right, and should, therefore, be prohibited? As the Chairman stated it was desired to impart all the knowledge possessed of the company's property and proceedings at the mines, he will, doubtless, promptly answer this question. ANTI-SLAVERY.

CHONTALES MINING COMPANY.

SIR,—We appear, as a company, to be unfortunate—not alone in the erection of new machinery, but also in being prepared for that which is required arising from wear and tear. In Mr. Danby's last monthly report from the mines, dated Aug. 5, he states—"We have not been able to crush more quartz at the mill owing to the want of the new spur-wheel and pinion ordered some months since; the old one, as I reported previously, was worn out when I came here, and there was no other to replace it." The history of this old spur-wheel, now worn out, is that it was ordered some months previous to February, 1873, and we find in the monthly account from the mines, February, 1874, the spur-wheel had been completed, and was working well. Now we have to do with spur-wheel No. 2, after our experience with spur-wheel No. 1. I ask the question—Ought those who are entrusted with looking after our interests at home to anticipate our wants, as well as to furnish the requirements of the manager at the mines? The dry season has passed without profit to the company, and if not the whole the greater part of the wet season, it would appear the same results are likely to follow.

I have previously mentioned the last 12 of the 36 stamps at the San Domingo mill, forwarded in 1872, and in only one monthly return is any reference as to be so far completed to justify the statement of their being actually at work. In the report from the mines, August, 1875, Mr. Smeddle states that since July 21 we have been driving 36 stamps, and crushed 2057 tons the following months, instead of getting, as promised with 36 stamps, 2700, 1733, 1749, 1756, 1150, 1050, 441, and no explanation given for the decade. I have also referred to the pneumatic stamps, which we find, April, 1874, had been ordered, and up to the present time have been worked about two months.

It is not only the monthly losses that appear in the monthly reports from the mines, there is, independent of them, the losses sustained in our home expenses—between 600*l.* and 700*l.* a month—and as shareholders we are not anxious to continue working the mines for the purpose of exhausting our remaining capital, and paying employees who have no other stake in the mine than what they obtain by way of salary. Some of the shareholders who can hold on, and who are satisfied with the mine, but not with the management, is one thing, but different with many whose circumstances have necessitated the disposal of their shares at the reduced value in the market.—*Bristol, Sept.* 21. W. B. P.

FLAGSTAFF MINE.

SIR,—Possibly some of your readers who are shareholders in this mine (respecting which nothing has been heard for a long time) might be glad to know that, from enquiries I made personally at the office of the company, there seems a probability of the mine coming shortly into the management of the directors, Mr. Davis, the mortgagee, having expressed his willingness to negociate for the whole amount of his debt being paid him in debentures; and I understand that the delay in issuing to the shareholders Mr. Vincent's very favourable report of the state of the mine when he visited it arises from the desire to incorporate in it the basis of arrangement concluded with Mr. Davis, whereby he will hand over the mine to the company.

Sept. 20. A SHAREHOLDER.

THE EMMA SILVER MINING COMPANY.

SIR,—What has become of the redoubtable Mr. Macdougall? Was he not at his own desire placed by a host of confiding admirers in the position of Chairman of the company, and endued with extraordinary powers, mainly for the purpose of carrying out an expressed intention of vengeance against all the principal parties in that unfortunate undertaking, and recovering for the poor deluded proprietors some portion, at least, of the money of which they had been defrauded? Many months have now elapsed, yet absolutely nothing has been done. What is this mighty champion about? Perhaps he is on a journey, or peradventure he sleepeth, and must be awakened. Let the shareholders, then, at once take steps in this direction by requiring Mr. Macdougall to give an account of his stewardship, and to explain his, at least, singular conduct. It is stated in last week's Journal that the mine has been sold to satisfy judgment claims, but not a word of this have I heard officially, although— A SUFFERING PROPRIETOR.

Sept. 19.

ROCK-BORING MACHINERY.

SIR,—In the "Report from Cornwall," published in last week's Journal, too much is undoubtedly claimed for Messrs. Josiah Thomas and Loam, as well as for the Barrow Borer. It cannot be said that Dolcoath has solved the problem in its way by the adoption of the Barrow Borer, the invention of a couple of Cornishmen, and the first boring machine that has ever been found practically useful in mining enterprise in Cornwall.

1. Doering, from July 1 to Oct. 31, 1868, drove a level 184 fms. below adit, on a vughy tin capel lode in Tincroft, with a ricketty compressor, a feeble air pressure—only 20 lbs. per inch—as rapidly, taking hindrance and character of lode into account, as has recently been accomplished by the Barrow Borer at Dolcoath.—2. The credit due to Messrs. Thomas and Loam is limited to the introduction of a borer into Dolcoath.—3. The Barrow Borer, the "invention of two Cornishmen," is simply this—Take the Kainotomon borer, substitute for the tail end of the valve a Burleigh tappet with its annular cam, and you have the valve gear; then connect the common turning-bar with the forwarding screw—a method once or twice patented, and previously tried by one or two inventors—and you have the turning gear. All the other parts are like the Kainotomon even in general dimensions. In no sense of the word, therefore, is the Barrow Borer a distinct invention. It is a borer made up from two others—chiefly from the Kainotomon, the remainder from the Burleigh.

Your useful and able correspondent will do well to check any haste in extolling the Barrow or any other borer until certain facts are known with regard to them.

As Messrs. Thomas and Loam are presumably the patrons of the Barrow Borer, they will do the mining public a service by answering a few questions:—1. What are the dimensions of the "end" which is being driven?—2. What pressure of air is necessary for running the borer?—3. What number of men is required in the end when the borer is at work, and how are the men disposed?—4. How are the holes "planted" in the end, to what average depth are they bored, and what diameter?—5. Are the holes fired singly or in volleys?—6. Is the power for driving the borers—cost of coal and wages of enginemen—provided by the adventurers?—7. How many borers are necessary to keep one running?—8. What is the cost of repairing the borer per fathom of ground, taking a length of 50 fms. driven? With regard to the Darlington borer, it would be very desirable to have it properly worked, "not tried;" it is, I believe, already in work, with very satisfactory results. I should like also to see other borers tried in the county. "Mine Captain" hit the nail correctly when he says that several rock-boring machines have been "successfully and thoroughly tested." K.

ROCK-BORING.

SIR,—The correspondence on this head, in last week's Journal, is very interesting, as it suggests many valuable ideas, and gives many important facts, the result of much experience. The letter of "Mine Captain" is a most thoughtful and carefully penned epistle. At last it is an established fact that the Barrow borer is a complete success. After much expense and trial, and a great deal of the anxiety consequent on the outlay of a large sum on experiments, Messrs. Loam and Thomas have proved that machine-boring is not only practicable in the tough rock of Cornwall, but that it can be made to pay. Prejudice and ignorance at first threw many obstacles in its way, and at one time threatened to stop its progress, but determination and pluck have surmounted all this, and the gentlemen named have the honour of being the introducers of practical machine boring. Imitators are not wanting, however, who desire to divide the honour, and the well-known mine captain and "financier" (!) Capt. Teague, of Tincroft and Carn Brea, has, with the aid of the public, secured the services of the Diamond Rock-Boring Company, Major Beaumont, M.P., managing director. The lesser "stars" are astonished, but having accomplished his end the astute captain is perfectly satisfied with the means employed. Major Beaumont will introduce his numerous and wealthy co-operators to Cornish mining, Carn Brea and Tincroft particularly, and by the infusion of new, healthy blood, poor fainting Cornwall is to be revived. This is a tempting programme, this is the dish which the chief "cook" (!) (we trust Capt. Teague will pardon the expression) of Tincroft and Carn Brea has prepared for his co-shareholders. The programme is very satisfactory from the above view, but let us review it another light—from the standpoint of one in public circles. Whether mining men will relish being pressed into the services of the two mines is extremely problematical; if so their generosity is quite inexplicable in these dull times, and is a grand instance of faithfulness to the motto, "One and All." We fear they are being deceived into the belief that good will be productive of this trial, but the only new fact likely to be elicited is that of the incompetency of the Beaumont drill. The Barrow drill has succeeded in making its way at Dolcoath with a speed bonus of 10 per cent., whereas Capt. Teague and the public co-operating offer the Rock Boring Company 30 per cent. premium. Generous public! Nothing can be gained at Carn Brea but dearly bought experience, and we fear that in tying themselves down to try the Beaumont drill for a period of six months the committee are committing themselves to an expenditure that will be deeply regretted long before the expiration of that time.

The Barrow borer is the machine best adapted for Cornwall, and has in its favour several most important qualities. It is light; it is not costly; it is simple and durable; it is not liable to get out of repair; and an intelligent man could learn to work it in ten minutes. With Barrow borers a trial might be made for 500*l.*—two machines at 80*l.*, 160*l.*; compressor, 240*l.*; air tubing (iron gas-pipe), 20*l.*; receiver, 20*l.*: total, 440*l.*, thus allowing a margin of 60*l.* for sundries, carriage, preliminary labour, and fixing. Compare this with the 1280*l.* to be paid the Drill Company for carriage and speed, and the result is evident. If Carn Brea and Tincroft adventurers desire to make the experiment let them do so by all means, but let them not ask the public for assistance; this is not only unfair, it is mean.

But, whilst writing on this, we would like to enquire if a machine-borer has ever been used in an open stope, and if there is any probability of its being done? In a stope deep holes would be advantageous, and what is wanted is an easy adaptation of a carriage; rails are not easily used, and here the bar of the Barrow borer would be most useful.—*Sept.* 20. N. B.

THE "SUBSIDISED" ROCK-BORER.

SIR,—The letter published by Mr. Basset in last week's *Mining Journal*, commenting on the circular issued by Mr. J. L. Bowden, of Tehidy, is by no means satisfactory. The language of the letter favours the subsidised borers, and bears more hardly on inventors without means or opportunity to bring their borers into active use. Mr. Basset now states that the trial between the Beaumont and the Barrow borer is not a trial for testing the comparative cheapness per fathom of the two machines to a pound or two, but a six months' comparative competitive trial of working results. As I pointed out in my letter in the last number of your Journal, no comparative competitive trial is likely to be satisfactory unless the conditions are equal with regard to character of ground, dimensions of borers, pressure of air, number of borers engaged or employed together, number of men in the pare, and actual cost of the work. No doubt, two of the 4-in. Beaumont borers will run together in the end with not less than a pare of 15 men, in relays of five men each. Moreover, the end will probably be 8 ft. square, to enable the men to angle the borers for the purpose of getting in deep centre-cut holes. To compare the results likely to follow from the power and organisation at the disposition of the Diamond Rock-Boring Company with the power and organisation of the Barrow contractors will manifestly be unjust to the latter, and, in common fairness, to be avoided. Mr. Basset's alleged object is to stimulate the energies of practical working men.

It is exceedingly questionable if this object will be secured, seeing that practical men will not visit Maesteg, Cwmbrain, Portskewit, the Wye Tunnel, Minera Mines, and Sir George Denys level in Yorkshire, where rock-borers are in regular and successful operation. The directors of the Diamond Rock Boring Company have no sympathy with Cornish mining or its miners. The position of its manager, Major Beaumont, is to make a profit for his shareholders, to keep his name actively before the public, and to render as little information as possible to any party likely to be a competitor. If Cornish mining is to be benefited let Mr. Basset's circular be withdrawn, and a fund raised for giving various rock-borers a trial on some clearly specified terms. For example: Select a mine—Carn Brea for instance. 2. Take a Cornish whim-engine, 30-in. cylinder, double acting. 3. Attach to the engine, by means of a spur-wheel gearing, two or four compressors. 4. For the limit of compression at 60 pressure per square inch. 5. Put an old boiler for a receiver. 6. Lay a main of air-pipes 4 inches in diameter. 7. Select three or four different borers for trial—the Darlington, the Beaumont, the McKean, and the Barrow. 8. Let the same cylinder diameter. 9. Mount the borers on a carriage. 10. Let each set of borers have an effective number of men to handle them. 11. Observe and note quantity of compressed air consumed per borer, average number of strokes made per minute, cost of repairing borers, work accomplished, and cost of work. 12. Let the trial of each set of borers terminate with the driving of 100 fathoms of ground. 13. Let each inventor for the purpose of trial supply borers at a cost not exceeding 40*l.* each. Let hand price be given by the mine for the ground driven, and any deficiency made out of the fund. The sum of 1000*l.* raised and spent in this way would procure the compressor, pipes, and borers. It would also secure the organisation necessary for effecting the work quickly, and enable the committee to draw conclusions of incalculable advantage to themselves and to the mining community. X.

THE SMOKE NUISANCE.

SIR,—I sometimes read complaints in the papers of this nuisance. Generally it is one that could be remedied without capital outlay, and with a saving in many ways to the mill-owner, by his using anthracite steam coal, as there are few furnaces that have not sufficient draught to burn it with advantage if the simple rule is observed of keeping a thick fire in front of the firebox or furnace. The air passing in unites with the light flame of the coal, and burns with a pure flame, which is sufficient to conduct the heat without fouling tubes or stack. The residue of ashes to be removed will hardly be one-fourth of that left by ordinary fuel. I speak from practical knowledge. I have had in use for about two years a small multitubular boiler; the fire-bars have not been changed, they are nearly as good as when put in, and so are the tubes. The engineer attending it, accustomed to other coals until he came to me some six months ago, says he never knew coals giving so little trouble. It has been said that anthracite is the coal of the future. We see it in the United States in general use, and its singular cleanliness and economy should commend it here. A ton of it may be made to do the work of a ton and a half of ordinary coal, while it can be produced and sold as cheap as any. As the subject is one of public interest, I shall be glad if you will give this letter a place in your columns.

Colliery Office, Swansea, Sept. 16. JAMES BANFIELD.

CORNISH MANGANIFEROUS ORES.

SIR,—As a Cornishman, I take an interest in all that concerns Cornwall, consequently I have been pleased to learn from your recent articles, as well as from other papers, that there is an increasing demand for iron ores containing manganese for the use of steel manufacturers and others, and if I may judge from the large orders for steel which have been given out during the last few weeks, and from the fact that during last month we imported no less than 40,000 tons more ore for steel making than we did in August of last year, and that a much greater demand will shortly take place for manganiferous iron ore, which is to be found in some parts of Cornwall. I also see from the Engineer of last week that the Ebbw Vale Company in Wales are freely importing Pormen ore, which, from what I understand, does not equal Cornish ore. You very properly ask the question, can Cornwall not supply the required ore, instead of our importing it in such large quantities? I quite agree with you, Cornwall can and ought. No doubt ironmasters often pay a higher price for Spanish ore than that at which Cornish ore of a superior quality might be delivered; in some cases, no doubt, because they are interested in Spanish mines, and have laid out a large capital in plant, both for mining operations, railway, and sea transit, and even should they find that they could have done better in Cornwall, it is only at a heavy loss that those who may have unfortunately invested in Spanish mines can retract, and heavy indeed must be the loss sustained by some holders of Spanish mines during the late Carlist insurrection—mines suspended, railroads destroyed, ships laid up, ports blocked, workmen and managers unemployed, and this all arising from causes over which the English proprietors had, and have, no control. I think that I would sooner have my mite invested in my native county, and with sound management and careful supervision there are setts in Cornwall that only require looking after to return good interest for capital expended, and I hear of a company about to open up one of the most advantageous setts in the St. Columb district, and I have great faith in their success, as I hear they are determined to start in a way which, if carout, will entirely obviate the evils heretofore experienced by Cornish mineowners. One reformation required you called attention to in one of your interesting articles on the "Prospects of Cornish Hematites." You hit the right nail on the head when you said the Cornish mines and Cornish ore received injury commercially for want of proper sorting. In fact, the Cornishmen must be more looked after, and more work done by experienced engineers and managers, when no doubt Cornish manganiferous ores will gain that standing in the market which they are so justly entitled to, and I trust that now the steel age has fairly set in, and railroads have been laid down, doing away with the long cartage which was a very serious draw-

back to Cornish mines, we shall see less foreign and more Cornish ore sent to English markets. I am convinced, Sir, that it only wants well looking after to cause a great revival.

Perhaps you would allow me to refer to an article in Chambers's Journal of August 19, where it is said that Spanish manganese dissolves quicker in acid than English, and as the less soluble is preferable for iron and steel making, the verdict is in favour of Cornwall, and if situations can be found on the great hematite lodes of Cornwall, where cost of carriage to shipping port and cost of machinery is reduced to a minimum, with capitalists to support energy, there can be no doubt of great benefit to Cornwall, and handsome interest to the speculators. ——— REFORMATION.

NASCENT COPPER COMPANY.

SIR,—Although I have a most decided objection in responding to communications to which the writer thereof does not feel disposed to attach his signature, still, as there is a slight mistake in my last week's letter I am desirous of correcting, an effort can be made at one and the same time to do so, and likewise satisfy "Enquirer's" doubts as to the ultimate gain to be made by the adoption of the process. We have first to consider that if smelters can afford to pay the high prices they do for copper ores, and also the heavy charges for treatment and bringing same to a saleable article, how much more would we be remunerated if ores of low class, which from their minimum quality have hitherto been wasted, can be purchased at some small amount and a large quantity expeditiously and satisfactorily treated per day at a much less cost by the day in the wet than in the dry—in other words, to smelt copper ores on the primitive plans still carried out requires some days, all which time coals and plant are going likewise. Now, put it this way—supposing it could be done in a quarter of that time, does it not stand to reason that there would result a fourfold gain? This is the beauty of the Nascent Process, in something like six hours the ore is sufficiently chloridised to enable the metals to be washed out and precipitated, so that in 24 hours four charges of stuff have been burnt. It will be my aim to enter more fully into the peculiarities of the different methods later on, when "Enquirer" may depend on learning the amount of fuel applied to the furnace and the result of a day's work on metallic ores. In proving the utility and success of the process let us glance over a few of the intricacies of the classification of metallic minerals as at present performed (with a few exceptions), and I hope it will be immediately perceived that the ultimate gain to both the miner as well as ourselves is immense. The operations of dressing are in some cases simplified, but still, to say the very least, it is a tedious and lengthy affair.

It is well known that all lodes are principally composed of rocky matter, impregnated with metals to too small an extent to pay the cost of transport to a distance and smelting in furnaces, rich ores only occurring in shoots at very rare intervals, and the proving of lodes by shafts and levels in search of these bunches or shoots is what has hitherto constituted mining, thus making it of a highly speculative character. These richer portions of the lode are broken or blasted, as the case may be, and raised to surface, again to be spalled to pieces of medium size, these latter being then submitted to inspection—*i.e.*, picking by hand; the very rich morsels are placed in No. 1 parcel, the lesser quality in No. 2, the lesser again in No. 3, and so on, the residue being cast away as waste matter. Following the picking, we have the crushing, jigging, carting or barging, sampling, and other incidentals before the ore is, or can be, disposed of. If, however, it were possible to quarry out a lode in bulk, and treat the entire mass in a manner to obtain an average profit per ton, mining would assume quite another aspect, and offer the certainty of regular dividends, in addition to the chance of rich bonuses from time to time as the more valuable portions of the lode were reached, besides which the miner would be in a position to dispense with the unnecessary operations of picking and jigging, and enabled accordingly to sell at a low rate (still to handsome advantage), without the usual expenses of dressing, samplers' fees, &c., which in the case I mention would be done away with as a thing of the past.

Returning to the present incorrect state of things in our mines, and the truth of my complaint in that quarter, look over the burrow, or waste heap, of any copper mine, and I will guarantee the lodey portion of the whole contains at the very least 1 per cent. of copper fairly thrown away because considered unsaleable. This company intend to remedy, if possible, this monstrous evil and blot on mining by offering for ores of low class as raised from underground, giving a fair price, taking the standard rates as guide, and if miners will only assist us now they will greatly benefit themselves in the immediate future. "Enquirer" asks "where mineral of the class mentioned is likely to be found in sufficient quantities to supply an establishment of the kind proposed?" This question I can settle by saying that, with money, ores of any quality can be procured, or purchased, or acquired at all times.

Say that this enterprise was as well acknowledged as it ought to be, we go into the market and say to the miners—"We can buy your material at as good a price as you have had heretofore, and we will take it from you at the low quality as coming from underground." I ask if that would not prove an inducement? Take Gawton Copper Mine as a spot by describing which my meaning is exemplified; here you have arsenical ores of tolerable richness brought from the bowels of the earth, giving in bulk, perhaps, 2½ per cent. of copper; this is cobbed, spalled, picked, jigged, crushed, &c., to bring it into marketable condition, which necessitates the employment of about 30 girls, and half that number of boys and men. Now, if we were in a position to buy, we could say—"You need not have these boys and girls, because we will take the ore as raised." Look at the expense saved, and the consequent gain to adventurers of both time and money. We, having the machinery, crush it ourselves to our requisite degree of fineness.

If "Enquirer" will forward his address to 80, Bishopsgate-street, it will afford me much pleasure in presenting him with every particular of the process, simply concluding by answering his question respecting cost of treatment by the wet method. Many trials have been made with the object of lessening the quantity of fuel used and increasing the quantity of ore to be treated per furnace, and I think a point has been arrived at with the following result:—Amount per furnace per diem, 6 tons; coals used per day, 13 or 14 cwts.; cost per ton, 12s. This, even "Enquirer" will say, is good, and I can vouch for the truth thereof. I trust, however, "Enquirer" will remember that these amounts may differ according to locality, difficulty, or otherwise, of procuring stores, materials, &c., and the statement as above refers more particularly to our own works.

As before mentioned, I am anxious to correct that portion of my last week's communication which mentions the amount of silver contained in the 2 per cent. ore. The particular phrase erroneously stated that if "the ore were to contain 5 ozs. silver per ton and 2 per cent. of copper, it would take about 32 tons of ore to make 1 ton of precipitate, and consequently the latter would contain 32 × 3= 96 ozs.," &c. It ought to have been 3 ozs. as the silver contents, had it been 5 in reality the amount per ton of precipitate would be 32 × 5=160 ozs.; so much the better, although, take English copper ores altogether, the average would be 5 if not 7 ozs. per ton, the value thereof almost entirely covering cost of treatment.

It is a remarkable peculiarity that Spanish and Portuguese pyrites contain about the smallest quantity of silver of any in the world, the analysis of a specimen giving but 9-10ths of an ounce per ton. To make up for the want of the precious metal, however, another combination is associated in a richer form than any from elsewhere; I refer to the sulphur, which averages 45 per cent., and iron of 40 per cent.; on the other hand, we receive ores from America and the Cape averaging 30 per cent. for copper, and at least 20 ozs. of silver per ton; then come the intermediate from Cornwall and Ireland of 7½ per cent. for copper, and 5 or 7 ozs. of silver. I hope to continue the subject of pyrites from Spain and elsewhere, as compared with home production, in a few weeks, and, therefore, shall proceed no further in the matter at present, other than to draw attention to the fact that if sales of ore are effected in a rough state as brought from underground, of what immense benefit this company will prove to be to the poor working miner, who under the present and cruel practice is kept without his remuneration because a particular parcel of ore has not been sampled, and to raise which they have worked by day as well as night for perhaps a month, or it may be two. I am sure captains and agents will endorse what I say about the wickedness of the *regime*, which most have confessed to me as their own feeling on the point, but powerless to remedy, as smelters would not sample for perhaps two months, then another before they received a settlement, which is *always* a bill of exchange at three months, without the same is discounted, the possessors must wait sometimes for six months from the time the ore is at hand and ready for disposal, and if the cash is received under discount the owners of the mining property must rest satisfied with a reduced amount for their produce. Now, I call this a most unsatisfactory state of affairs, and one that need not be; the profits made by smelters are quite bywords we all know, they can, therefore, well afford to grant better terms; if they must give bills, let them be for short dates—say, one month, or 40 days. Miners say, "We must accept their settlements by promises at a lengthy period, or refuse it," which latter alternative means starvation, as there would be none to assist them in that dilemma; therefore, if all will study our prospectus, they will find that by supporting this company these unhappy grievances would be abolished. THOS. H. MILLER, Sec.

80, *Bishopsgate-street, Sept.* 20.

THE NASCENT COPPER COMPANY.

SIR,—In last week's Journal Mr. Thomas H. Miller gave considerable information concerning an invention, to carry out which he is endeavouring to constitute a company under the above title. While admitting that the statements made by that gentleman, which appear in your valuable Journal, serve as a fair guide as to the magnitude of the works which the company would acquire, there appears to me to be an absence in his remarks of information which is of vital importance to the investing community. Therefore, since your correspondent seeks to introduce the concern as an investment possessing all the desired features of success, and as he says he will be pleased to give such particulars as may be required, I consider I am justified in asking Mr. Miller for a little further information as most concerns me as an investor, and you, Mr. Editor, to publish the same.

To whom is the management and practical working of the works to be intrusted? Is Mr. Barnard or Dr. Emmens in any way connected with the affair? Was not the South Downs Metal Works at Plymouth started with the same intentions as this company—*i.e.*, for treating low-quality copper ores from the mines of Devon and Cornwall, and did they not, after giving the project a fair trial, abandon it, and resort to the treatment of Spanish pyrites instead? Perhaps Mr. Miller is not aware of this fact, if so, how does he account for its failure?—*Tavistock, Sept.* 18. INVESTOR.

CORNWALL AS A FIELD FOR INVESTMENT.

SIR,—There are a few men whose minds are like the sun, shining over and embracing all, whilst too many of us are like the flickering light of a candle, whose influence is comprised in a very small area, owing undoubtedly to a crabbed and narrow disposition. At the present time we do not want in Cornwall to monopolise the whole channel of wealth, but this we do most seriously need—to divert a branch of the said channel into Cornish industries. Just look at us as a nation, with its vaulted millions of money lying dormant, with scaacely any percentage of interest; look at the princely merchants, bankers, and manufacturers of the metropolis, and other large cities and towns, with no place to bestow their surplus cash. They have during the past year or two seen the fallacy of investing their money in bonds, and have been practically convinced of the swindling (we had almost said inseparably) connected with such foreign mammoth speculations as the Emma, the Lisbon Tramway Company, &c., with which the names of influential people are so ignominiously associated. The past year or two has reminded everyone that even the staple industries of the country—coal and iron—are but fickle, that it is not now considered an impossibility for iron manufacturers to become insolvent, and that even coal mines are not always reliable sources of income. With the facts of the past three or four years before him the capitalist asks—Where can I speculate my money with the greatest chances of success? If I invest in the mines of the North there the labourer will dictate to me what wages he shall earn, or there will be a suspension of the works, by means of those strikes which are the curse of all industries, and so prolific of human wretchedness and misery. If I discover any mines in the Principality the exorbitant dues will engross all, or nearly all, the profits. If I go to the mines of the South-West I see that many mines are struggling for existence, that local capitalists have staked their whole in a few of the mines, and which must collapse ere the important point has been reached. I see other young mines which would well repay the adventurers, even with the present low price of metal, on a small further outlay. Many a "diamond on Golconda's shore" has long laid neglected in the virgin mineral ground of the South-West, and a thousand other voices call pathetically to the wealthy "Come and help."

It may be asked, why give the preference to Cornwall and Devon? Because by casting our eyes over the total dividend mines for the past 40 or 50 years we see the mines have given a high percentage. In an article in the *Mining Journal* of November 25, 1854, we read that "The copper, tin, and lead mines of Cornwall and Devon for the past four years gave the following results:—61 in Cornwall gave 825,835*l.*, whilst 5 in Devonshire gave 109 912*l.*, or 16·35 per cent. of the aggregate yield of those districts for that period." Again, whilst looking over the history of the two counties, we see that some of the most illustrious families owe their origin entirely to Cornish mining, whilst not a name has been struck off from the "upper ten" on account of losses sustained in the development of mining in the two counties. Another reason is that the Cornish landowners are as a rule now prepared to execute deeds on the most liberal terms; it has been even intimated on a portion of the profits. Capitalists can come to Cornwall to see their property at a trifling expense, and can have their mine inspected by our mine agents for 2*l.* 2s., compared with the 200*l.* or 300*l.* and in some cases 400*l.* to inspect a foreign mine by the same agent. Again, the speculator will have the Cornishman to superintend his mine, no matter in what part of the world it is situated; then it is evident if he know so much about the mineral veins, strata, &c., of the country into which he enters as a stranger, he must certainly be well informed about the lodes, dislocations, and so on, of his native place, and the miners of Cornwall have always been characterised by the attention they pay to the property of their employers, and their exemplary consistent spirit of subordination.

Mining will never be stripped of that which renders it speculative and uncertain; it can never be reduced to an estimate of pounds, shillings, and pence, although we see many fallacious attempts in prospectuses; a computation of profits on total outlay cannot be correctly determined; the output of ore cannot be ascertained with precision; of the expenditure in developing a sett we know but little. But this we do know that mining in Cornwall and Devon will sooner be divested of the hypothetical than elsewhere; it will sooner be deprived of that *ignis fatuus* which entraps the unwary into abortive schemes; it will more readily cease to be the vehicle to traffic with artless simplicity; and will sooner, we presume to say, be reduced to mathematical calculations.

Mining in Cornwall is now being conducted on a fair and legitimate basis; it is not now, as in the "good old days" of the past, of which we have read much and heard more, a fortress into which the swindler and defrauder could safely shelter; it is not the resort of brokers alone, who lived by gulling the incautious; it is not an illusion to entangle the unsuspecting, or an hallucination to inveigle novices; it is not merely an incubus upon society, or are its commotions effeminate and momentary on the community; but it is an honourable and honest pursuit, one that any gentleman can enter into heartily without sullying his untarnished name; one that offers a fair percentage, and presents *bona fide* chances of success.

What makes the chances of non-success in Cornwall being reduced to a minimum? Are the careful perusals of such letters as published in the Journal from "Cousin Jack's Unpublished Manuscripts," which, although containing much interesting, extraneous, and irrilevant matter, also contain much that is of indispensable service to those who intend starting into mining, with the listening to the lengthened observations over an extensive arena of practice of that veteran Capt. Joe Vivian, or the reading the valuable lectures of the late Capt. Charles Thomas and the results of his inspecting tours in more than 200 of the mines of Cornwall and Devon, with the history and analogous reasoning of the lodes, cross-courses, &c., of the various mining districts as published by the Miners' Association. ——— EDWARD SKEWIS.

DIVIDEND LEAD MINING AT HOME.

SIR,—Up to this date fifteen lead mines recognised on the mining market, and quoted in your Share List have declared dividends during the current year. These mines are scattered over the county, and by no means represent the lead-producing enterprises of the day. Not one of the mines of Yorkshire, Durham, Derby, Cumberland, and Westmorland are included, while even Snailbeach, in Shropshire, is omitted. This district is represented by Tankerville and Roman Gravels alone; the first on a capital of 72,000*l.* sells for 125,00*l.*, and has already divided 55,200*l.* in dividends; the present price is called up 90,000*l.*, sells for 160,000*l.* and has divided 72,700*l.*, the last dividend was 8s. 6d., and the closing price 13¼ to 13¾ a share. There are as usual in profitable districts numerous satellites of more or less magnitude, as, for instance, Ladywell, New Crickheath, Pennerley, and West Tankerville. In Flintshire we have the Duchess of Westminster, with a capital of 15,000*l.*, and dividends up to date 2250*l.*; Prince Patrick 18,000*l.* called up, against dividends of 12,600*l.*, and a market value of 19,000*l.* There are many sound progressive undertakings in this district.

Montgomeryshire presents us with Dyliffe, Van, and West Wye Valley. Dyliffe is re-introduced as a fresh company, in 15,000 shares of 4*l.* each, and sells at about 10 to 20 per cent. prem.; one dividend of 2s. 6d. a share has been declared. The Van sells for 565,000*l.*, pays dividends of 12,000*l.* quarterly, and has already divided 274,125*l.* on a capital of 63,750*l.* West Wye Valley has called up 30,000*l.*, sells at 20 per cent. prem., and declared dividends of 1800*l.* In this district we have several mines which in the past few years have attracted great attention, though, unhappily, no dividends have been declared. East Van, 90,000*l.* called up, sells at 180,000*l.*, and at one time commanded a market value of 320,000*l.* Central Van has called up 50,000*l.*, and nothing doing in the shares. Van Consols has a capital of 50,000*l.*, and sells at 40 per cent. dis. Wye Valley has yielded dividends of 6s. a share, called up 30,000*l.*, and sells at 10) per cent. prem. Cwm Nant Ddu, Llanrhaiadr, South Van, Glyn, and West Llangynog are all reputed to be mines of promise, and represent respectively capitals of 15,000*l.*, 50,000*l.*, 12,000, 20,000*l.*, and 20,000*l.*, or (say) 117,000*l.* for these five speculative companies, the merits of which are wholly undefined for lack of development.

Cardiganshire gives us East Darren, Grogwinion, and Lisburne; the dividends on these have been respectively 70,650*l.*, 8,00*l.*, and 230,600*l.*, against called up capitals of 9750*l.*, 40,00*l.*, and 750*l.*; the first and last mines have been long at work, and are seldom dealt in upon the London market. Grogwinion, however, attracts considerable and deserved attention, but though the price is only 110,000*l.*, or just 60 per cent. of the market value of East Van, the last quarterly dividend was 2000*l.*, and the prospects of expansion are unquestionably good. Cornwall gives us two mines—Great Retallack and West Chiverton; the first has simply divided 77*l.*, and the latter 163,500*l.*; the management of the latter has passed from Cornish to London supervision. Calls of 7500*l.* were made, and the mine is declaring quarterly dividends of 1500*l.*, or at the rate of 11 per cent. on the market value of 54,000*l.* The Isle of Man gives us the Foxdale, which has divided 230,300*l.* on a capital of 70,000*l.*, and Great Laxey 302,250*l.* on 60,000*l.* called up; the shares in the former mine are not dealt in on the London share market, but those of Great Laxey are freely negociated at 18*l.* to 19*l.* each, or equal to about nine years purchase money.

The last dividend mine quoted by you is Minera, near Wrexham, which consists of 9000 shares of 5*l.* each; the dividends have been above thirteen-fold the expenditure, 587,775*l.*, while the market price stands at 20*l.* to 22*l.* a share, or 300 to 340 per cent. premium.

There are many lead properties that can now be purchased with advantage, but those are mostly held by private investors—the market dealers very nearly discover a prize—the Van, Great Laxey, Lisburne, Dyliffe, Foxdale, Minera, West Chiverton, and most others of note were discovered through local or private enterprise and capital, and the great prizes of the day and those of the future will spring from earnest and practical development of lodes, and never from market dealings in shares. We have constantly, nay daily, under our notice mines of sterling wealth that languish for want of capital to work them, while many a bubble scheme floats upon the surface current of events with all the ease and freedom of actual inherent merits and worth. Investors have nothing to do with these; they should seek properties of vital growth, expansion, and permanency, fostered and protected by practicals—*i.e.*, look to the mines, and not the dealings in shares on the London Exchange.

These mines very fairly represent the working of the Cost-Book System and the Limited Liability, and it must be apparent to the observer that the results are most striking in favour of the former. Unlimited responsibility, as practised in mining, is fair to one and all, while the shareholders have themselves to blame if they encounter more than their quota of costs. Upon the Cost-Book System East Darren has paid back in dividends 70,650*l.*, upon a called-up capital of 9750*l.*; Lisburne, 230,600*l.* upon 7500*l.*; West Chiverton, 163,500*l.* on 37,500*l.*, or an average yield of profits of 849 per cent. on the gross called-up capital. On the contrary, Roman Gravels has given in dividends 72,000*l.* on 90,000*l.* capital; Tankerville, 55,200*l.* on 72,000*l.*; Van, 274,125*l.* on 63,750*l.*; West Wye Valley, 1800*l.* on 30,000*l.*; Prince Patrick, 12,600*l.* on 18,000*l.*; Minera, 587,775*l.* on 45,000*l.*; Grogwinion, 8000*l.* on 40,000*l.*; Great Laxey, 302,250*l.* on 60,000*l.*; Great Dyliffe, 1875*l.* on 60,000*l.*; Foxdale, 230,300*l.*, on 70,000*l.*; and Duchess of Westminster, 2250*l.* on 15,000*l.*—expenditure on 11 mines, embracing the greatest prizes of the day, 569,750*l.*, on gross profits of 1,547,975*l.*, or (say) 272 per cent. in dividends.

There are six lead mines which declared dividends in 1875, but are in *statu quo* for 1876—though in the aggregate they have yielded the sum of 35,291*l.*—on called-up capital of 161,000*l.* The subjoined are the statistics:—

	Outlay.	Dividends.
Cashwell	£16,000	£8200
Llanidloes	42,000	3150
Melindur Valley	33 000	3941

	Outlay.	Dividends.
North Hendre ...	£30,000	£13,500
So. Prin. Patrick	10,000	3,600
Wye Valley	30,000	3,000

There are other lead mines that are in abeyance as regards dividends still at work, though unprofitable to shareholders since the dates specified—Cargoll, 1872; Great West Van, 1874; Green Hurth, 1874; Herodsfoot, 1872; Killaloe, 1873; and Old Treburgett, 1873. These six mines have yielded dividends of 87,338*l.* on an aggregate capital of 141,882*l.*, or (say) 62 per cent. Two of these mines—Herodsfoot and Cargoll—are conducted on the Cost-Book System, and have paid back in dividends 21½ and 73¼ per cent. on outlay, while Great West Van has paid 5 per cent.; Green Hurth, 533 per cent.; Killaloe, 20 per cent.; and Old Treburgett, 5½ per cent. on their several capitals under the Limited Liability Acts. At some future day we will pursue this question further, as there are unquestionable good sound progressive mines that ought to take the lead on the London share market which sell now at 20 per cent. of the quoted prices of many a scheme loudly advocated. As, for instance, Pennant consisting of 6000 shares, 5*l.* each, sell at 10s. to 15s. prem.; this property is well handled, the secretary is up to his work, and as pioneer points become developed important and favourable changes in market value may be relied upon.

In conclusion, we may as well preach to the weird winds which roll the doomed ship to destruction as attempt to direct the public mind and action to undertakings of merit rather than schemes of chance—the fascination of gambling has wholly supplanted the discipline of sound investment—otherwise we should not have a South Caradon selling for 50,000*l.*, and an East Van for 180,000*l.*, a West Tolgus for 26 000*l.*, and a Belstone for 80,000*l.*, or a Glyn for 30,000*l.*, and a Lisburne for 27,000*l.*, a Llanrwst for 90,000*l.*, and a South Condurrow for 25,000*l.* Examples are far too numerous to enumerate. The public have ever refused to purchase when prices rule low, or to sell when they run high, hence the losses to hundreds and thou-

sands through mining, railways, joint stock banks, and other fluctuating undertakings. When will cool judgment supplant theoretic aspirations? Echo answers—never!

To render mining remunerative patience, perseverance, and practical expenditure of time and money are essential—nay, indispensable. Mines should be sought in good mineral districts, lodes must be charged with ores in bulk and quality to yield profits over costs of extraction; then economy, development, and rapid returns to market are alone required to ensure gains to shareholders—the interests of landlords, merchants, and executives should never be protected at the cost of the proprietary. To prolong the working of a valueless mine is equally suicidal with the shipment of bullion in a rotten or scuttled ship; managers and executives will do well to remember this fact. A situation or emolument held upon such terms is equally indefensible on principle as iniquitous in practice. Speculation is the soul of mining, but there is a wide difference between enterprise and temerity, though all must admit that hope is the talisman and perseverance the harbinger of success. "Ne cede malis sed, contra, audentior ito!"

R. TREDINNICK,
Dealer in Stocks and Shares.

79, Cornhill, Sept. 20.

EAST GOGINAN MINE.

SIR,—I quite agree with the letter of your correspondent, signed "A Twenty-Five Years' Subscriber to the *Mining Journal*," as to the discoveries likely to be made by extending the 80 east, and also as to the quantity of lead ore it will in all probability lay open, but by driving a cross-cut north 6 fathoms at the 36 fm. level under adit, or the 92 fm. level as it has been called, which can be done at a cost of 50*l.*, from the run of the ore in the upper levels, courses of ore should be laid open that would yield a much larger quantity than by driving the 80 east, and should almost at once bring the mine into a state of profits.—*Sept.* 20. MINER.

NEW CONSOLS.

SIR,—Within the last few days I have paid my first visit to these works, and, notwithstanding the rumours some parties may circulate concerning it, I am quite satisfied as to the value of the process, and shall shortly meet Sir John St. Aubyn and Mr. G. L. Basset, both of whom are gentlemen who take deep interest in any new thing which is likely to be conducive to the welfare of Cornish mining. Whether or not the mode of operation at this mine proves a success, every credit is due to Capt. R. Pryor. I know enough of chemistry to judge for myself that this work is a great success, and we have many other mines in Cornwall that would do quite as well as this if worked on the same principle, which is bound to do wonders for Cornwall. Cheer up, disheartened adventurers! and have a look at the mine for yourselves; and all who understand the mode of working will agree with me in saying that the county will soon see brighter days, although the price of tin is so low.

Camborne, Sept. 21. R. T.

WHEAL GRENVILLE.

SIR,—If a correspondent makes assertions knowing the same to be false the object, it must be assumed, is an unworthy one; when, however, this is done in an assumed name, as is the case with your correspondent, "F. L. A. T. Rodda," there need be no surprise that the communications are treated with silent contempt, as I have hitherto exhibited towards all letters from that quarter. It is well-known to those interested that this name is assumed by an important official, whose removal last year, with others, was necessary for the better management of the affairs of this company. I did not, therefore, intend again troubling you with any further correspondence, but when the correctness of my figures is questioned, and others given, with an excuse, "one must have access to the cost-sheets, which I hardly imagine Mr. Lane would grant me," I think, in justice to those interested, I should give the figures on which I based my statement to the shareholders at the last general meeting. If "F. L. A. T. Rodda" is a shareholder he would not require consent from me to examine the cost-sheets, as he could demand this at any time; but, independent of this, he would receive the regular balance-sheets, giving him every information not only with respect to the accounts, but also the position of the mine, &c. If he be not a shareholder why does he interfere in that which concerns him not? "F. L. A. T. Rodda" says that during the seven months of the old management 100 men were employed underground. This is offered as an excuse for the heavy expenses of the old management; if, however, a less number of men be employed to do a similar quantity of work it clearly shows that better judgment is exercised. And I now state that the work is better done, that the mine is fairly worked, as is evidenced by the quantity of ground laid open, and the assurance of our agent that the reserves have increased, and not diminished, during his management—that is to say, more ore ground has been laid open than that taken away. With regard to the breakages, I admit they are constant; but this would not have been the case if a proper amount of money had been judiciously laid out monthly to keep the machinery in proper order by the old managers, and would have saved the present adventurers several hundred pounds immediate and necessary expenditure. For confirmation of this I would refer to the report forwarded to the shareholders on Sept. 5, by Messrs. Hocking and Son, who were engineers also under the old management, wherein they say, referring to the pumping-engine, on which a very large outlay has been made, and charged in the monthly costs—"These alterations have considerably improved the working of the engine; in fact, it has not been in better working order for a considerable time past. The improvements made have shown good results by a decreased consumption of coals." With regard to the stamping-engine, "an excellent job has been done here by changing the broken stamps axle and putting in new frames. They have been in a rotten state for a long time, but it is well done, and you are now reaping the benefit by being able to stamp a largely increased quantity of tinstuff." Probably many of the breakages could have been avoided if an immediate renewal of all machinery had been at once attempted when the new management took possession; but I question whether the delay to the workings would not have proved a more expensive proceeding, and the calls upon the shareholders heavier, taking into consideration that a legacy from the old management of merchants' bills owing of 4914*l.* 18s. 11d. As the engineers' report leads shareholders to anticipate further outlay in the continued improvements in the machinery and dressing appliances, this will be done as occasion requires, the cost of which will be paid monthly, and the benefit immediate, besides adding greatly to the value of the plant.

The figures underneath are taken from the printed balance-sheet forwarded by the late secretary, Mr. John Watson, after the usual quarterly meetings. Under the old system the tin sales were presumed to be made every calendar month, making 12 sales against 13 months' cost, consequently, during the year, one of the quarterly accounts would be credited with three months' returns against four months' costs. The present management sell every four weeks, so that the amount realised from the sales shall be applied to the payment of cost-sheet, and the profit or loss correctly ascertained each month. The merchants' bills were paid at the discretion of the late secretary; they were, therefore, as in the accounts issued lumped together. By the present management they are paid with the labour costs and discounts deducted.

It pleased Capt. Hosking to sell the tin in two batches, calling their qualities Nos. 1 and 2, the best being dressed to about 13¼ produce. Capt. Hodge dresses all the tin to a produce of about 13⅛, and although he may sell a smaller quantity, yet the judgment of this must be gathered from the result. Therefore in calculating on the average prices obtained for the tin, and drawing a comparison between the seven months of this year, the prices obtained by No. 1 parcels of Capt. Hosking's sales must be taken.

In consequence of the great decline in the price of tin between February, 1875, and February, 1876, the greatest drop being between September, 1875, and February, 1876, the price per ton obtained by Capt. Hodge was less by 8*l.* 10s. 4d. per ton than if he had sold at the corresponding dates of 1875. "F. L. A. T. Rodda" says the differences was only 3*l.* 17s.; he shows his ignorance besides want of truthfulness, as if he will compare the quoted prices of refined tin, given in the *Mining Journal*, he will find they are as follows:—Feb. 18, 1875, price 98*l.* per ton; September, 1875, 92*l.*; February, 1876, 82*l.*; September, 1876, 78*l.*, so that between the lowest price, which is at the present time, and against which we have to contend, and the highest price which refined tin was selling during the seven months referred to by the old management, there is a fall of 20*l.* per ton.

COSTS AND SALES FOR SEVEN MONTHS IN 1875.

To four weeks' labour costs, Jan. 30 to Feb. 27, 1875		£ 660	12 11
ditto	March 27	684	1 8
ditto	April 24	701	16 4
ditto	May 22	633	13 8
Merchants' bills		1605	17 5
Royalty		158	12 3
Four weeks' cost, to June 19, 1875		649	11 3
ditto	July 17	627	0 10
ditto	August 14	496	0 5
Discount, ore bill		5	2 3
Merchants' bills		1094	11 5
Royalty		122	2 0
Total cost for 196 days		£7419	2 5
Average per month, 1059*l.* 17s. 6d.			
By tin sales from Jan. 28 to Feb. 24, 1875		£ 522	4 3
ditto	March 24	636	18 11
ditto	April 21	580	5 6
ditto	May 20	659	6 4
ditto	July 7	1025	13 4
ditto	August 5	582	9 3
The following sale is made on Sept. 4, 1876, 675*l.* 3s., but as the costs is only charged to Aug. 14, I give one-third, or 10 days raisings, bringing the returns to Aug. 15 ...		225	1 0
Total returns, 199 days		£4231	18 7
Total loss for seven months, 3187*l.* 3s. 10d., or 455*l.* 6s. 3d. per month.			
Average price obtained for No. 1 parcel of tin, 53*l.* 6s. 1d.			

Returns and cost for 7 months under Capt. Hodge's management:

Paid March 23, four weeks' costs and bills, to Feb. 26, 1876 ...				£ 910	7 8
April 20	ditto	ditto	March 25	868	4 11
May 18	ditto	ditto	April 22	908	16 11
June 15	ditto	ditto	May 20	970	9 11
July 13	ditto	ditto	June 17	808	8 5
Aug. 11	ditto	ditto	July 15	672	15 10
Sept. 8	ditto	ditto	August 12	890	2 3
Bankers' charges, six months				14	6 0
Secretary's salary, sundry charges, &c., seven months ...				75	14 6
Total cost, 196 days				£6119	6 5
Average per month, seven months, 874*l.* 3s. 9d.					
By tin sold, March 23, 1876				£ 579	16 2
ditto	April 20			625	9 10
ditto	May 18			636	14 7
Copper ore, June 6				60	18 2
Tin sold, June 20				594	15 0
ditto	July 17			524	14 0
ditto	August 10			526	9 5
ditto	September 8			598	10 1
Copper ore, August 3				45	8 3
Discounts from merchants				63	1 11
Total returns, 196 days				£4255	17 5
Total loss for seven months, 1863*l.* 9s., being an average of 266*l.* 4s. 1d. per month.					
Average price obtained for tin, 44*l.* 15s. 9d.					

The quantity of tin sold during the seven months was 95 tons 7 cwts., which, if the same prices had been realised as during the seven corresponding months of last year under the old management, would have brought 811*l.* 4s. 3d. in excess of what was received, hence the loss for the past seven months would only have been 1052*l.* 4s. 9d., or 150*l.* 6s. 4d. per month; and this in the face of the many difficulties which the agent has had to contend with. Pray give "honour where honour is due," and the thanks of the shareholders are certainly due to Capt. Hodge.

For my part I promised the shareholders a reduction in cost and increased returns from a change in management, which has been accomplished, but more yet remains to be done. I believe we may confidently rely upon an increase in quantity of the sales from the present time, and should the price of tin advance the shareholders may look forward to better times. I would warn parties against statements put forth by those whose only interest is to damage the property. Any information can at all times be obtained at the office, and I feel convinced from experience that if we could only obtain prices for our produce such as were obtained by the old management two years since good profits would accrue to the shareholders.

Threadneedle-street. F. G. LANE.

PREMIUMS FOR MINES.

SIR,—I hope your readers will not apprehend from my observations in last week's *Mining Journal* that I meant that in no case is it fair to ask premiums for mines. I referred to mines of a purely speculative character, where no discoveries have been made to warrant any charge for the setts. I know of numerous mines where no discoveries have been made to warrant heavy premiums, and where the purchasers have realised 10 or 20 times the amount paid for them. What I object to is the demand made by promoters of companies for the right to work in ground where there is no lode, or nothing of value discovered in any lode known to be in it, as has been the case in numerous instances which I could adduce, but need not. If an agent, or miner, or any other person find a prize he can fairly ask for it what he considers its real or probable value. There can be nothing wrong in that, but if misrepresentation is used to dispose of a mine, if what people call "puffing" is adopted, there is iniquity in it. What I like to see in every pursuit is "fair play"—the not taking any advantage of the ignorance or inexperience of willing speculators. In this respect I may say without boast that I have "clean hands," and I hope to keep them so. I have lost hundreds of pounds in past years by always holding on shares. I never sold but five shares in mines, and by the transaction I gained only about 30s.—*Truro, Sept.* 21. R. SYMONS.

OUTLET FOR CAPITAL.

SIR,—Gentlemen, and gentlewomen too, having found by painful experience that mines yield little or no interest on capital invested in them, but on the contrary that they absorb in most cases all the money "paid up," are on the look out for some more substantial property on which to lay out their surplus cash. Many of them have been thoroughly disgusted at the premiums paid for worthless mines, and at the manifold tricks by which they have been divested of their money. Some of them have vowed never again to take a share in any mine, and denouncing all concerned in the promotion and management of mines as thieves and robbers. If promoters of mining had been uniformly honest and judicious in their selection of mining sites the mining interest would not at this time (notwithstanding the depression in prices) be the subject of so much odium as is now attached to it. There can be no doubt that brokers are highly culpable in this matter, for while they have been the instruments of bringing a large amount of capital into Cornwall, they have at the same time taken great advantage of the ignorance of capitalists by introducing them to bad mines, and for which they have charged heavy premiums. I doubt not that brokers as a body are just as honest as other bodies in the British community. I have dealt with many of them, and amongst the whole I have found only one truly bad, and he showed himself as a most consummate rogue and swindler, having defrauded me to the extent of nearly 2000*l.* But I believe that he has expended all that he ever acquired by all the means employed, good and bad.

I can suggest to capitalists a thing or two as subjects for investment, which would pay better than indiscriminate mining. The town of Helston, in Cornwall, which has a population of 4000 or 5000, and is the market town for the large districts of Meneage, Wendron, Breage, &c., has no railway. It is 10 miles from Penryn where there is a station of the Cornwall Railway, and nine miles from Gwinear-road station of the West Cornwall Railway. Now, it would be well to construct a railway to Helston from one or both of those railways. About three years ago when in London a solicitor requested me to delineate on ordnance sheets the course I proposed for a railway from Gwinear-road to Helston. I did so, but he did nothing in the matter. The ground is well calculated for a railway, involving no heavy cuttings, and only two viaducts. This line would take the traffic from Penzance, Hayle, Camborne, Redruth, &c., to Helston and the districts named, which would be considerable. The well-known Lizard Point, Kynance Cove, Coverack, &c., watering places would be served thereby. I believe that at some future day a railway will be laid down to the Lizard village. The line from the Cornwall railway to Helston should start from a point near Ponsanooth village, and proceed up the Kennal Valley to meet the Wendron Valley. No viaduct would be required, but it might be necessary to have one tunnel. Of this I am not sure, having never levelled the ground. To get over the summit, I suppose, would not make the gradient more than one in 50 or 60. The length of this line would be about nine miles. It would take all the eastern traffic to Helston and the districts named, and would, doubtless, pay well. If any persons are disposed to take up these lines, or either of them, there is just time enough left for making the surveys for deposit on or before Nov. 30, in compliance with the Standing Orders of Parliament. I have no interest to be served by the adoption of these suggestions except that which is common to other Cornish residents—facility of transit. R. SYMONS.

Truro, Sept. 19.

MONTHLY PAY DAYS AND SETTING DAYS.

SIR,—The excellent letter on this subject in last week's Journal is quite to the point. If miners were paid weekly we should say "weekly pay days"—*i.e.*, 52 weekly pay days—but if by monthly pay days, it surely means by 12 monthly payments. It is absurd to think of any other but 12 months should be allowed by managers or shareholders. It is exceedingly inconvenient to managers, underground agents, pursers or clerks, secretaries, and directors, as well as a serious loss to companies, to allow 13 monthly payments instead of 12, and I am glad to find from enquiry that very few mines—perhaps not more than about 25 per cent.—allow of 13 monthly payments, and the sooner these abandon such a system the better. If secretaries and managers were to pay a little more attention to the interests of shareholders in attending to the business of the companies, and less to share markets, it would be desirable.

A FACT.

BRITISH MINING—SHAREHOLDERS LOOK TO YOUR INTERESTS.

SIR,—There are many signs of a revival in British mining. More especially so is this the case in lead, in which such large prizes have been and are still being drawn. One or two London firms have done much to draw public attention to lead mining, and by judicious selection of mines have been the means of putting large profits into the pockets of their clients. It is not, however, every good mine which is made to pay dividends, and it is to point out one cause of this and suggest a remedy that I now write. We will say a company is formed, and a board of directors and London manager appointed, all gentlemen willing and anxious to do their best for their brother shareholders; but, and here is the weak point, these gentlemen sitting in London are necessarily dependent upon the mine captain's letters, and are virtually in his hands, a visit to the mines once a year, of which due notice is given, being the maximum of their personal inspection. I know very well that there are many conscientious and highly creditable captains who try their utmost to make the mines under their charge a success. Such men would feel a pride in showing their mine, and hearing its management well spoken of, but to others who are careless or incompetent (and it is notorious there are such) an inspection would have a beneficial effect upon. Now, what I propose is that someone in whom confidence could be placed should be engaged to visit the mines—say, about six times a year—at uncertain periods, and send in his report to the London office for the benefit of the shareholders. If six or eight companies joined together in doing this the expense to each would not be very great, the moral effect at the mines would be good, the shareholders would feel greater security, and would place more confidence in the reports of an independent and disinterested man. A SHAREHOLDER IN MANY MINES.

SOUTH WHEAL FRANCES.

SIR,—It is not a fact that the relinquishment of all shares at the last meeting came from friends of Mr. Laws. I know nothing of Mr. Laws, neither have I been advised or influenced by that gentleman or his friends. It is quite clear to everyone acquainted with the flowery and every-going "to become rich" reports issued from time to time on the merits of this mine that it is so far a complete failure, and the late or old aventurers, who wisely sold out at 60*l.* and 70*l.* per share some four or five years since, believed then that the mine was an exhausted one. The agents and executives of the company have their positions at stake, and must do all they can to keep the thing going. The Flat lode has been the key of the slips, and so far it is a failure. We are 205 fms. deep it appears, with a lode producing a few pounds of tin ore to the ton of lodestuff. We have three steam-engines to provide for in coals, oils, grease, packing, &c., together with agencies, land drainages, rents, rates and taxes, merchants' bills, &c.—all this is it appears to me to no purpose but to the interest of the executive.

Sept. 20. A RELINQUISHED SHAREHOLDER.

[For remainder of Original Correspondence, see to-day's Journal.]

FOREIGN MINING AND METALLURGY.

The horizon is slightly clearing in the French iron trade, and the situation is changing rather favourably. The improvement is not very marked it is true, but it appears to be general, and it is independent of large orders, of which a good deal of noise has been made. The Paris, Lyons, and Mediterranean Railway Company has concluded a contract for the delivery of 150,000 tons of rails; the execution of this order, which has been divided between the Creusot, the Fourchambault, and the Terrenoire Works, is to be spread over five years. It is scarcely possible to say at present how this arrangement will turn out; it does not appear very advisable for works to enter upon such long-termed engagements at current rates. The intelligence is, nevertheless, favourable in this sense, that the arrangement has a tendency to mitigate the competition of the great works with each other. The conclusion of the contract in question is also looked upon in some quarters as indicating a return of a season of large orders. Nevertheless, prices do not improve; on the contrary, in the Nord they are still declining, or at any rate contracts are reported upon lower terms than those current during the last few months. Upon the Paris iron market quotations have been nearly maintained. The regulations of the Paris Exhibition of 1878 have just appeared; great facilities are to be accorded to exhibitors of metallurgical products. Serious hopes of future orders are entertained in connection with this exhibition.

The Paris copper market has remained without animation, and prices have been rather feeble. Chilian copper in bars, delivered at Havre, has made 77*l.*; ditto, ordinary descriptions, 75*l.*; ditto, in ingots, 79*l.*; English tough cake, 78*l.*; and pure Corocoro minerals, 76*l.* per ton. Chilian copper has been comparatively neglected at Havre, and it is quoted nominally at 74*l.* to 75*l.* per ton for first marks in bars. Upon the German copper markets the demand has become rather more active; at the same time prices have not experienced any change. The demand for tin has rather improved upon the Rotterdam market. Several transactions have taken place in Banca, at 42 fls. A transaction in Billiton is reported at 41 fls. At Paris Banca, delivered at Havre or Paris, has made 77*l.*; Straits ditto, 76*l.*; and English, delivered at Havre or Rouen, 77*l.* per ton. The German copper markets have ruled quiet, and prices have remained without variation. French lead, delivered at Paris, has made 21*l.* 12s.; Spanish, delivered at Havre, 21*l.* 8s.; English ditto, 21*l.* 12s.; and Belgian and German, delivered at Paris, 21*l.* 12s. per ton. The Marseilles lead market has remained firm. The German lead markets have also been firm, and prices have slightly advanced. The Paris zinc market has shown little animation, but Silesian zinc, delivered at Havre, has brought 24*l.* 8s. per ton; other marks have made 24*l.* per ton, without regard to the place of delivery. An advance has taken place in rolled zinc at Marseilles; Vieille-Montagne in sheets has brought 32*l.* per ton. The German zinc markets have been firm.

The approach of winter is making its influence seriously felt in the French coal trade, transactions reflecting the activity ordinarily incident to the new season. The extraction is being readily placed from day to day, and many stocks are sensibly reduced. The change is not, however, sufficiently marked to exert any influence on prices, and no decided upward movement has occurred at present. Prices are maintained with a tolerable amount of firmness, but that is all. It appears probable that there will be a slight upward movement in quotations, but the question is will it be serious and durable? The answer will no doubt be found in the future condition of French metallurgical industry; at present that industry is in an indecisive

state. The appearance of the sugar beet crop has improved, and it is expected that beetroot sugar manufacturing industry will absorb a fair amount of coal. In the basin of the Loire business has exhibited some activity.

Striking intelligence absolutely makes default as regards the Belgian iron trade, but the demand has been generally more active, and a slight revival in affairs is anticipated now that autumn has fairly set in. The manufacture of merchants' iron and plates is carried on in a tolerably sustained fashion, but foreign orders are still secured with difficulty, notwithstanding the low rates current. The Belgian mechanical construction shops have a fair amount of work on hand, but most of the establishments which occupy themselves only with railway rolling stock have only very little to do. The question of mechanical traction for tramways has made little progress at Brussels; the last machine tried on the Bois de la Cambre line has, nevertheless, yielded excellent results.

The demand for coal has been comparatively inactive upon the Belgian markets, nevertheless offers do not make default. Consumers maintain an attitude of the greatest reserve, and in order to obtain Belgian coal at very reduced prices they lend attentive ears to the proposals of English and German colliery owners. Quotations remain at a very low point, and deliveries have not sensibly increased. Upon the whole, the market presents no improvement. The Liége basin, into which Ruhr coal flows freely, is the district which complains the most. The character of the approaching winter season will become more clearly defined in about a month.

ON THE ALLEGED SAFETY OF TONITE.

Since the lamentable explosion at West Basset, and the discharge of the coroner's jury without giving a verdict, there has been a considerable amount of discussion amongst miners as to whether the Act of Parliament permits, as the Government Inspector for the Cornwall and Devon district suggests it does, the hammering of an explosive into a bore-hole with an iron bar; not that the miners, or at least any of the more intelligent of them, would for a moment sanction such a reckless proceeding, but because they feel that if such a practice is permitted by Act of Parliament the boasted benefits in the shape of increased safety which it pretends to confer upon miners is a farce, and opens a way for those interested in the sale of explosives to create an amount of recklessness amongst the miners which cannot fail to be most prejudicial to the entire community.

It appeared that the Cotton Powder Company, the manufacturers of the tonite, freely circulated a list of regulations for its use, one of which was that—"There is no danger whatever in loading a bore-hole or mine so long as the cap and primer are not inserted. The ordinary cartridges may be cut or broken up, and rammed in with a metal or other rammer as tight as possible if the charges and holes do not agree, but the primer with the cap should always be put in easily." The coroner and the jury alike believed this rule to be misleading, and there can really be scarcely two opinions in the matter.

It was also elicited at the inquest that another claim frequently made by vendors of this explosive is equally unjustified by fact; one witness characterising as a lie the statement that the miners might go into the workings immediately after firing, and adding that they could not do it without being stifled. The witness's statement is indisputably true with regard to every explosive whatever, for whatever explosive may be used it is absolutely necessary that a certain time should be allowed to permit the gases generated by the explosion to be dispersed—the length of time necessary being, of course, dependent on the closeness of the end and the completeness of the combustion, which varies considerably even with the same explosive, according to the expertness of the miner by whom the hole is charged. But the possibility, or otherwise, of entering an end after a shot has been fired has really nothing to do with the present question, the accident having been caused by ramming in the charge. Upon this point it is evident that the vendors of the tonite have too high an opinion of the safety of that material, for at the inquest Mr. Mackie offered to pound a tonite cartridge with a heavy sledge hammer without firing it, and said that he had frequently driven down cartridges himself with an iron hammer to show the general safety of the tonite, yet admitted almost in the same breath that he had driven a cartridge 15 in. down a tight-fitting hole, and at least twenty times he had set fire to them by the friction in the force of driving, but they had burnt away harmlessly, thus acknowledging ignition to be a not uncommon occurrence, although such ignition must necessarily be accompanied by a certain amount of danger.

VISIT OF MEMBERS OF THE BRITISH ASSOCIATION TO THE BRITISH DYNAMITE WORKS, STEVENSTON.

On Saturday morning members of the British Association, and other gentlemen deeply interested in all that relates to scientific enquiry, left Bridge-street Station by special train, *en route* for the British Dynamite Company's works at Ardeer, where they witnessed a number of most interesting experiments, which were conducted with safety and success by Mr. McRoberts, the efficient manager of the works, who was assisted on the present, as on former occasions, by Mr. Kater and Mr. Macdonald, chemists. Shortly before twelve the party arrived at the gates, where they were received by Mr. McRoberts, who conducted them through the various parts of the works, and thoroughly explained the various stages of the manufacture—beginning with the raw materials; then taking up the extraction of nitric acid from nitrate of soda, and the several processes connected therewith; the mixing of the nitric acid with glycerine, forming nitro glycerine; then the mixing of this combination with kieselguhr—a kind of earth found in Germany, capable of absorbing the nitro-glycerine to the extent of 75 per cent.; then the formation of this compound into dynamite cartridges, after which it is put into 5 lbs. boxes, and sold at 2s. a pound. All this was explained in a manner so minute and so exhaustive that the least scientific member of the party could not fail to comprehend the whole process. Before proceeding to the nitro-glycerine department everyone was obliged, in accordance with the regulations in force, to empty his pockets of all pipes, matches, keys, &c. The party then proceeded to the sandhills, situated nearly a mile from Stevenston Station, and close upon the fine seashore which is in close proximity to the manufactory, where a number of experiments, explanatory of the nature and the varied uses to which dynamite may be put, were made by Mr. McRoberts and his assistants. The safety with which it can be employed, and the small chance there is of explosion without a detonator, as well as its terrible force when exploded, was demonstrated. The nicety with which any particular object can be operated upon without doing injury to the surroundings was particularly noticeable, and convincing illustrations were afforded as illustrating with what safety the manufactured article can be transmitted, without danger of explosion under almost any circumstances.

Among the gentlemen present were—Mr. J. C. Aitken, agent of the company at Edinburgh, and Mrs Aitken; Mr. J. P. G. Smith, Sutton Maddock, Shropshire; Rev. John C. Brown, LL.D., Cape of Good Hope; Mr. Alfred H. Allen, Sheffield City Analyst; Mr. W. Forest, Baimyre; Mr. J. F. Ure, Glasgow; Mr. David Picken, Glasgow; Mr. Hugh Blackburn, Glasgow; Prof. T. C. Archer, Edinburgh University; Prof. Blackburn, Glasgow University; Mr. M. R. Pryor, London; Mr. John Anthony, M.D., F.R.C.P., Birmingham; Mr. Thomas Bishop, F.R.C.P. (London), of Paris; Alex. Kidd, banker (Birkenhead); Mr. G. C. Foster, Professor of Natural Philosophy, London, and Mrs. Foster; Mr. John Carson, agent of the company at Belfast; Prof. G. J. Bottomley, Glasgow University; Prof. Alex. Crum Brown, Edinburgh; Mr. J. M. Kennady, Kirkcudbright; Prof. John Purser, Queen's College, Belfast; Prof. H. J. Hancock, Dublin; Mr. John Thomson, Belfast; Mr. James Brownlie, Glasgow; Prof. J. Ferguson, Glasgow University; Mr. Thomas Symon, Glasgow; Mr. Robert Inglis, Glasgow; Mr. Robert Blyth, Glasgow; Dr. J. Ritchie Brown, Saltcoats; Mr. W. Hill; L. Thomson, secretary of the company at Glasgow; Mr. John Crum, manager, Ardeer Ironworks; Mr. H. Scott, Falkirk; Mr. Alex. A. Cuthbert, manager of the company at Glasgow; Messrs C. Randolph, H. Beckett, and A. S. Schaw, directors of the company, and Mrs. Beckett; Mr. James D. Shaw, "Leeds Mercury"; Mr. Thomas G. Dunning, "Manchester Guardian"; Mr. George Cruickshanks, "Scotsman"; Mr. McRoberts, manager of the works; and Mr. Kater, one of the chemists, &c.

EXPERIMENTS.

1.—Showed the method of fixing cap, and how it detonates. The cartridge was halved, a light applied to one half which was thrown down, and continued to burn without exploding. The other half, to which a fuse and detonator were applied, having placed at a distance, exploded with a sharp report.

2.—To show its value as a fog signal, two cartridges, tied to a piece of string were suspended 3 ft. from the end of a 20 ft. fishing-rod; the rod was held by an assistant, the fuse lighted, and the cartridges exploded without injuring rod or man, and only 2 in. of the string was found to be awanting afterwards.

3.—A train of cartridges was laid down end to end in the form of a cross, separated 1 in. from each other. On the fusee being lighted at one end an instantaneous explosion of the whole of the cartridges took place, leaving the impression of a large cross on the sand, and a still deeper impression on the minds of the spectators.

4.—1 lb. of gunpowder was poured into a 5 lb. package of dynamite, and handed round that all the gentlemen might see it. A piece of fuse, without the detonator, was inserted and lighted. On the explosion of the gunpowder the dynamite was violently thrown out of the package in a blazing state, and so was entirely consumed, but did not explode. This was regarded by the astonished spectators as a most striking experiment, and sufficient in itself to stay all opposition to its ready transit by land or sea.

5.—To show that dynamite will not explode in the event of a railway or other collision, a block of iron, weighing 4 cwts., was suspended at a distance of 21 feet from the ground, and immediately underneath was placed a 50 lb. box of dynamite. The rope by which the iron block was suspended was cut by firing a cartridge attached thereto, when the mass of iron fell with a crash upon the box, completely smashed it and all its contents, but without producing an explosion.

6.—A piece of wire-rope, 3 in. in circumference, was suspended in the air; eight cartridges of dynamite (1 lb. weight) were tied to the rod, and exploded in the usual way; whereby the rod was cut clean through, and one of the pieces thrown a distance of 30 yards. The rod was not broken short, but drawn out to a point, as if some enormous weight had dragged the pieces asunder.

7.—A round tin was filled with about 12 lbs. of dynamite, and placed on a solid block of iron. On exploding the dynamite, a large round indentation was made on the block, which was cracked in all directions.

8.—A wooden gun, with a bore of 3 in., and open at both ends, was completely filled with dynamite, and two pieces of tin-plate, 9 in. diameter, put at each end. Two pieces of wrought-iron boiler plate, ½ in. thick, were placed, one at each end, at a distance of 18 in. from the gun. On exploding the dynamite, the pieces of tin were blown through the iron plate—a circumstance which greatly surprised, and educated the minds of the scientists as to its power as a blasting agent.

9.—The last experiment was designed to show that the explosion of a large quantity of dynamite has no injurious effect on objects within a short distance. A raft having been moored on a small pond in the neighbourhood and four small cases placed in the centre, to represent a loaded barge, a bag containing 10 lbs. of dynamite was placed immediately underneath the raft, at the bottom of the pond. The spectators took up positions on the hill sides, about 300 or 400 yards from the pond. When all was ready Mr. M'Roberts fired the shot by electricity. The first time it did not go off; but on readjusting the fuse, and making the circuit, the thing went off with a deafening sound, smashing raft, boxes, and everthing to atoms, and throwing splinters and water high into the air, besides making a hole in the pond about 12 or 14 ft. in extent. The effect produced by this experiment was perfectly astounding.

The experiments all proved most successful, and were grandly illustrative of the mighty force of dynamite as an explosive agent, and the various methods of employing it, whether for ordinary blasting purposes, signals at sea, blowing down walls and bridges, shattering masses of iron, blowing up ships or rafts, snapping chains or wire ropes. One gentlemen stepped forward, and asked that three hearty cheers be given for the success of the British Dynamite Company, which were very heartily given.

The experiments over, the party adjourned to the laboratory, where dinner was served up in a style that was simply magnificent—Mr. Charles Randolph, occupied the chair, and Messrs. H. Beckett and A. S. Schaw, acted as croupiers.

The Chairman (Mr. Charles Randolph), after the health of the Queen and Royal Family had been pledged, in felicitous terms gave the health of their guests—the members of the British Association—expressing the pleasure it afforded the directors to welcome their distinguished visitors, and show the works and the various processes in operation, and demonstrate the power and useful properties of dynamite while it was under complete control.

The toast was responded to by Professor Crum Brown, who proposed "The British Dynamite Company," wishing them all success. He had learned much to-day, and would recommend it with every confidence from what he had seen of its safety and power.

The health of Mr. Randolph, the Chairman, was drunk next; and also that of the croupiers—responded to by Mr. Schaw.

The health of Mr. M'Roberts was then proposed, and that gentleman was thanked warmly for the great kindness and attention he had shown the visitors, and for describing so minutely the various stages of the manufacture.

Mr. M'Roberts fittingly replied.

The party returned to Glasgow by special train about four o'clock.

THE BRITISH IRON TRADE ASSOCIATION.

A meeting of this association was held on Tuesday, at the Town Hall, Leeds; the President (Mr. G. T. Clark, of Dowlais) in the chair. —The Chairman said that some time ago they had a communication from the Associated Chambers of Commerce referring to a request made by the Foreign Office for information on the subject of foreign tariffs, especially on the French and German tariffs. That communication was referred to them as the organ of the steel and iron trades, and they had taken means to obtain reports as to the state of those trades from various districts, which reports would be laid before them.—A report describing the unsatisfactory condition of trade in South Wales was then read by the Chairman; and Mr. Jones, the secretary, stated that reports had also been received from the West Coast, North Staffordshire, Lancashire, Lincolnshire, North Wales, and the North of England; but there had been a difficulty in getting particulars from the South Staffordshire district, owing to the number of small establishments there. —It was agreed that, failing the early receipt of a report from the latter district, a general report based on the information already received should be prepared and forwarded for the guidance of the Foreign Secretary.—The Chairman next mentioned that a somewhat singular correspondence had taken place between Mr. Jones (the secretary) and the Foreign Office with reference to an increase of Russian duties on iron and steel. In a letter to the Foreign Office they had called attention to reports of an increase of these duties, and a kind if the reports were correct. Lord Derby, in reply, stated that the Foreign Office had no information on the subject, but that he would forward their communication to the British Ambassador at St. Petersburg. This was, he supposed, done, and after considerable delay the Association received a communication confirming the rumours they had brought under the notice of the Foreign Secretary, and indicating that protective measures were being adopted in Russia with regard to iron and steel imported for the making of the local railways. The correspondence showed that the Foreign Office, alive as it might be in some matters, was not always thoroughly posted up as to important questions affecting the leading trades of the kingdom. It seemed hard that Russia, which had always to come to England for capital to carry out her public works, should do anything to prevent England competing for the production of the material for the works. (Hear, hear.)

A discussion was next introduced by Mr. Samuelson, M.P. on the subject of the French Treaty, and it was agreed, on the suggestion of the Chairman and supported by Mr. Heath, M.P. that Mr. Samuelson, M.P. and Mr. Lowthian Bell, M.P. with the Secretary, be requested to visit Paris and any other capitals they might think necessary in order to represent the interests of the iron trade, and to secure if possible favourable terms in the negociation of fresh treaties.—Mr. Heath, M.P., Mr. Brogden, M. P., and other gentlemen called attention to the manner in which various bills which had recently been before Parliament affected the interests of their trade, including the Rating Bill, Mines Inspection Bill, and the Employers Liability Bill, advising that the Iron Trade Association and the Mines Association should watch such measures as those.—It was agreed to re-appoint the Committee to whom this business has hitherto been committed.—Mr. Lowthian Bell, M.P., who has recently returned from a visit to the United States, referred with some regret to to the unfriendly and unfair tone adopted towards Great Britain in the report of the Iron and Steel Institute of the States. He was extremely sorry, after having himself received much hospitality from his American friends, to find that such expressions as he had observed in the report should have been allowed to appear in that publication.—The Chairman said it was evident throughout the whole report that there was an animus against Great Britain.

THE HULL HYDRAULIC POWER COMPANY.

The Hull Hydraulic Power Company celebrated the completion of their new works in Machel-street, on Sept. 14. During the day the work were visited by several leading gentlemen of the town and neighbourhood. Through the kindness of Mr. Henry Robinson, C.E., Westminster Chambers, we are enabled to furnish the following particulars respecting the company and the works:—

"In the year 1872 an Act of Parliament was obtained for the purpose of establishing at Kingston-upon-Hull what was termed in the preamble of the Act 'a system for applying motive-power by hydraulic pressure to waterside and land cranes, used for the purpose of raising and landing goods, and for working dock gates and other machinery.' It is also authorised the abstraction from the Old Harbour of the River Hull an amount of water not exceeding a million gallons a day, for distribution within the company's district, for which a payment was to be made to the Corporation of 12l. 10s. per annum for each quarter of a million gallons, the water to be used for no other purpose than as a motive-power, except with the consent of the Corporation. A 6-in. pressure main has been laid from the northern boundary of the defined area, near the Cottingham drain; in a southerly direction along Wincolmlee. Trippett Dock Office row, under the Old Dock Basin (which forms the eastern or River Hull entrance to the Queen's Dock), and crossing this entrance it is laid along the whole length of High street, terminating close to the western approach of the South Bridge across the River Hull. The length of pressure main laid, exclusive of the dock crossing, is altogether 1485 yards, that on the north side of the dock entrance being 673 yards in length, and that on the south side 812 yards. In laying this main many obstructions were met with in the shape of old sewers, gas and water pipes, gullies, &c., all of which had to be avoided. This involved much careful arrangement of bends and irregular pipes, and the difficulties were increased, as the street through which the works were carried out had a heavy goods traffic over them, and in many parts, especially in High-street, were very narrow. An engine-house has been built to receive eventually four 80 horse power engines. As the ground beneath this site was silty and treacherous, the foundations had to be carried down 24 ft. before a good bottom was reached on hard clay. The footings of the wall are built on a series of arches carried on concrete piers, which made sound and economical work. The engine-house is covered by a cast-iron tank. Two pairs of 60-horse power high-pressure horizontal pumping engines have been erected, capable of pumping about 300 gallons per minute at 700 lbs. pressure per square inch, with steam at 100 lbs. pressure, supplied by two Lancashire boilers, fitted with the most approved appliances. The water supply from the River Hull is filtered, One accumulator is erected at the pumping station in Machel-street. It has a diameter of 18 in. and stroke of 20 ft. The case is loaded with 65 tons of slag and sand, which gives a pressure of 600 lbs. per inch in the main. The accumulator case and cylinder rest on concrete piers carried down to the solid clay, and are enclosed in a brick tower. The supply of water is obtained from the River Hull, and is pumped through a 10-in. suction pipe into the tank over the engine-house. The distance from the river to the pumping site is 125 yards, and the total height of the lift from low tide level to top of tank is 35 ft. A centrifugal pump (in duplicate), fixed in the engine house, raises the water from the river to the tank. The water-power supplied by the company will be paid for by the consumer at rates dependent on the amount of water used. The following tariff has been issued by company:—One crane in one warehouse, 52l. per annum; two cranes in one warehouse, 94l. per annum; three cranes in one warehouse, 132 per annum; and four cranes in one warehouse, 166l. per annum. Each crane will have a counter attached to it to register the amount of work done: 100 tons may be lifted 40 ft., or 200 tons 20 ft., and so on, each day by each crane for the above charge, which is under one halfpenny per ton for a lift of 40 ft. If more work than this is done, the extra work will be charged at the rate of 4s. for every additional 100 tons lifted 40 ft. Special rates will be made for working presses, hydraulic engines, capstans, small cranes, &c., as occasion arises. The consumer of the power effects a great reduction in his expenses where he is using hand power, and where steam power is used the engines, boilers, &c., can be dispensed with, by which the risk of fire is diminished, and the space occupied by them is made available for other purposes. He is further able to dispense with the skilled labour required to attend to them. The upper floors of warehouses can also be more utilised, and higher floors can be advantageously added to existing buildings. Hydraulic powers is always, and instantly, available to meet the requirements of the consumer, and at a cost to him only in proportion to the power absolutely consumed in the same way that he pays for gas, or the ordinary domestic water service.

We may state that the works have been carried out by Mr. Henry Robinson, C.E., the company's engineer, assisted by Mr. Frederick W. Thornton, the resident engineer. The machinery was supplied by the Hydraulic Engineering Company, of Chester. Already the Dock Company have made arrangements for taking a 4-in. pipe from the Hydraulic Company's main for the purpose of working cranes and appliances at the Queen's Dock, and several parties in High street are preparing to take the power. This is the first work of the kind which has been carried out on the co operative principle in the country.

Amongst the numerous visitors to the works during the day were—Mr. Marillier, engineer to the Hull Dock Company; Alderman Waller, Chairman of the Works Committee; Mr. Leak (of Roberts and Leak), solicitors to the company; Mr. Messrs. Norman's; Mr. Williams, Mr. Plimpton, Mr. Copper, Mr. Du Gillon, Mr. Easton, Mr. James, and Mr. Bohn. All the visitors expressed themselves highly satisfied with the works, which were regarded as complete in every respect. They also wished success to the company's operations; and commencing, as they do, under the auspices of the Hull Dock Company such success, we feel assured, will attend the undertaking.

CORUNDUM.

At the *conversazione* of the American Institute of Mining Engineers, Mr. C. W. JENKS, of Boston, made some interesting remarks on Corundum. He said that the mineral corundum or pure crystalised alumina, had been known and used by the natives of the East for many ages, who ranked its abrasive powers as next to those of the diamond. The chief sources of supply were certain districts in the Himalaya Mountains in Hindostan. As far as is known, the corundum was never legitimately mined in those districts, but it was picked up in the river valleys where it had been washed by the annual rains. The amount of corundum obtained in this way was very small, not amounting probably to more than 20 tons per annum from all Asia. The name corundum now given to this mineral, whatever be the locality where it is found, was taken from the Hindoo word kurand, or cinnamon stone, the Hindoo variety having the colour of the well-known product of the Orient.

The nine most valuable gems known as the Oriential—ruby, sapphire, emerald, &c., are coloured corundum. They have hitherto been found in the beds of rivers, and in the alluvial drift deposits in Burmah, Ceylon, Bactria, and India, occurring as more or less water-worn crystals. Emery, which is an impure corundum consisting of a mixture of alumina and magnetic oxide of iron, is found in many places in varying quantities, and is mined to some extent near Ephesus in Asia Minor, at Naxos, in Greece and at Chester in Massachusetts. Within a few years discoveries have been made of veins carrying pure corundum in the western slopes of the Blue Ridge Mountains, in North Carolina. The granitic rocks, which make up the principal mass of these mountains, have been fissured in many places by large dykes of chrysolite and serpentine, in the localities where the corundum carrying veins are found. These veins traverse the dykes, and are mainly composed of chlorite and chloritic minerals, carrying with them masses of corundum.

Mr. Jenks then showed a considerable number of specimens of corundum which he had obtained from some of these veins at an elevation of about 3000 ft. above the sea. The serpentine dyke which contains the veins from which the specimens shown were taken is about 1 mile long, and from 100 to 400 ft. high. Five nearly parallel veins, which dip into the mountain side, have been already partially worked, and over 100 tons of corundum in all forms have been brought to the surface. The greatest depth yet reached in any of these veins is 75 ft. The corundum, which varies in size from microscopic crystals to lamellar crystalline masses, weighing as much as 300 lbs., is found embedded in many aluminous minerals, some of the most common of which are albite, orthoclase, ripidolite, and Jeffersonite. This matrix makes the extraction of the corundum from the vein quite easy, blasting seldom being necessary. The specimens of corundum shown by Mr. Jenks were very varied in character; some of them had the distinctive colours which belong to the ruby, the sapphire, the emerald, and the topaz. Several specimens, in fact, showed these different colourings in concentric layers in the same specimen.

Among several crystals of different colour which were shown there, was one quite handsome sapphire, which had been found in a matrix of granular corundum. Mr. Jenks stated that these crystals were sometimes found embedded in this way in corundum, and sometimes as water worn pebbles embedded in the ripidolite. Mr. Jenks expressed the opinion that had the masses of corundum containing these crystals been exposed to water action, their lamellar structure would soon cause them to disintegrate and leave the gems as they are generally found. This fact of the discovery of these crystals associated with the massive corundum he thought seemed to dispose of the theory heretofore held by many mineralogists, that their formation has taken place in the secondary formations. As is well known, the abrasive powers of pure corundum are greater than those of emery. Experiments which have been made with this corundum at the Springfield Armory and elsewhere, have shown it to accomplish 35 per cent. more work than the best Naxos emery. When cemented in vitrified wheels it cuts readily and rapidly granite, chilled iron, hardened steel, all the corundum gems, and even the diamond. From what has already been done it is known that this corundum can be put in the market, cleaned and graded for use, at a cost of 20 cents per pound.

"THE INTERCOLONIAL."

A handsome and highly interesting volume giving a historical sketch of the inception, location, construction, and completion of the line of railway uniting the inland and Atlantic provinces of the Dominion of Canada,* has just been completed by Mr. SANDFORD FLEMING, C.E., the engineer in chief of the Newfoundland, Intercolonial, and Canada Pacific Railways, and forms, in fact, his final report upon the works. He points out that a report such as the usual course prescribes (the road being now in a position to be opened for traffic) would necessarily be professional and technical, and would be confined to a description of the results obtained, and a statement of their cost. But the Intercolonial Railway being national in its objects he has felt it incumbent on him to depart somewhat from the course generally followed on such occasions, in order to give the early history of the railway, and to trace the causes which prevented the adoption of a direct route, and in this connection he reviews the negociations which ended in the establishment of the Maine boundary. He describes the frequent fruitless attempts which were subsequently made to obtain the means of constructing the line, and the considerations which led to the adoption of the present route. As Mr. Fleming has occupied the position of chief engineer from the commencement of the Survey, now 13 years ago, he is well able to write authoritatively upon the subject. At that period a long tract of wilderness separated the maritime from the inland provinces, but he claims that the railway which now connects them will rank second to none on that continent. In the embellishment of its structures it may be surpassed by the lines of the old world, but in the essentials of a railway it will, when entirely completed, have no superior. Some further expenditure is still necessary, but the railway is in a condition to be opened for traffic throughout its entire length, so that his official relations with the work now terminate.

Several important improvements in practice have been introduced by Mr. Fleming in carrying out the works, not the least of which is the substitution of towers within the heart of the embankment for winged abutments. It is well known that winged abutmens, even if built sufficiently massive to resist the thrust of embankment are frequently injured and ultimately destroyed through other agency. If the embankment be formed of any material that will hold moisture the low temperature of winter is certain to act injuriously upon it. The moist clay or earth behind the masonry becomes frozen solid, and in obedience to the expansive power of frost produces an irresistable thrust on the masonry which, whatever its strength, will eventually becomes fractured and displaced. This destructive agent acting year after year will sooner or later render reconstruction a necessity. This effect can never take place with the bridge abutments of the Intercolonial Railway. It is impossible for the hollow towers placed in the hearts of the embankments to be rent asunder, or in any way injured either by the thrust of the earth or by frost. The pressure is at all times external, and being nearly uniform from all sides, no destructive effects can result. It is not claimed that there is anything remarkable or novel in the peculiar kind of abutment described, but it is held that the principle of construction observed shows a due regard to economy, as well as to engineering requirements and climatic conditions.

The details throughout the volume are so carefully given that the information obtainable from the perusal of it will prove of great utility to many other members of the profession, and especially to students, in guiding them as to some of the difficulties to be surmounted in railway construction, and the best means of surmounting them; and as the illustrations are very numerous and excellently engraved, the misunderstanding of any of the particulars given is virtually impossible.

* "The Intercolonial:" a Sketch, &c. By SANFORD FLEMING, C.E. Montreal: Dawson Brothers. London: Sampson Low, Marston, and Co., Fleet street.

THE WILL OF A WEALTHY COPPER SMELTER.—The will of Mr. Chas. Lambert, late of Queen-street place, Upper Thames-street, who died at Allityfetts, Carmarthenshire, was proved by Mr. Charles Lambert, the son, and Edward Bath, the son-in-law, the executors, the personal estate being sworn under 80,000l. The testator leaves to his son his works and business, with the capital and assets, and all his other property in Chili, also a pecuniary legacy of 250,000l. free of duty; upon trust for his daughter, Mrs. Margaret Spears Bath, for life, and at her death among his grandchildren, as she shall by will appoint, 100,000l.; upon trust for his daughters, Mrs. Eugenie Bath and Mrs. Helen Mark, for their respective lives, and at their deaths to their issue, as they shall by will appoint, 100,000l. each, all free of duty; to be distributed among the persons in his employ in England and Wales and scientific societies in Great Britain, as his son shall direct, 25,000l.; all the residue of his property he gives to his said son. Mr. Lambert was well known in his county as a buyer of Cornish ores, No. 7 on ticketing list, Mr. Samuel Abbotts acting as local cashier, and Mr. J. H. Reynolds as assayer, both of Redruth. Mr. Lambert is said to have amassed considerable property in transactions on the Stock Exchange, and to have been possessed of a valuable property in Chili. His generous disposition of leaving the princely sum of 25,000l. among his employes might well be imitated by other wealthy merchants.

SALE OF MINE MATERIALS.—Mr. Thomas Kinsman, auctioneer, St. Austell, sold by public auction a lot of valuable mine materials, on Wednesday, belonging the Bryn Royalton Mine, Roche. There was rather a large attendance of dealers

from all parts of the county, and, considering the dead state of the market, very fair prices for the various lots were realised. Iron made from 2*l*. 6*d*. to 3*l*. per cwt.; iron rolls, 3*l*. per ton; kibbles, 10*s*. each; tram wagons, 10*s*. to 12*s*. each; stamps made 40*l*., and 200*l*. was the most that could be obtained for a 30-in. cylinder rotary engine, of 10-ft. stroke, double action.

CHINA CLAY AND ARSENIC.—Clay moves off freely in fair quantities, at last week's quotations. Inferior, 12*s*. to 15*s*., f.o.b. Cornwall; Rosemellyn, 24*s*.; BM, 34*s*.; arsenic, 10*l*. 10*s*.—*West Briton*.

THE SWEDISH IRON MANUFACTURE.

Although the improvements made in connection with the manufacture of iron in other countries during the last century have rendered them more independent of Sweden for the higher qualities of metal, there are still many purposes for which Swedish iron is still considered indispensable, so that the very interesting memoir on the present state of the iron manufacture in Sweden, by Professor Richard Akerman, of the Stockholm School of Mines (London: E. and F. N. Spon, Charing Cross) will be acceptable to all connected with the practical application of iron and steel. He remarks that the Swedish iron manufacture has been in a state of uninterrupted development, not only as regards the quality of the iron produced but also the amount of production, although relatively Sweden does not now take so high a place among iron-producing countries as she did before fossil fuel began to be employed in the iron manufacture, but this is explained by the absence of a dense population and of abundant supplies of coal. But the quality of the Swedish iron, far from deteriorating during the course of time, has, with the help of better modes of production, been greatly improved, inasmuch as it has become purer, more even, and more compact than formerly, and even the quantity manufactured has increased not inconsiderably, the production of Swedish iron in 1870 having been one and a half times greater than in 1860. The exports have been almost exclusively as unmanufactured iron or steel, and not as finished product, and the manufacture or production of finished iron goods, except nails, has not been so great as even to supply the home demand.

That the quantity is so small is by no means caused by any deficiency in the supplies of ore, for Sweden is exceedingly rich in iron ores, which in general are of particularly good quality. Most of the iron ore deposits are found in a belt stretching from north-east to south-west—the old Järnbararland—which embraces the southern part of Gefleborg's län and the south-eastern part of Kopparberg's län, north of Westmanlands, and the greater part of Orebro län, together with eastern Wermland. If in this belt be included Winkarn, in Kopparberg's län, there are no considerable deposits of iron ore known to exist to the north of it, except far up in Norrbotten, where immense deposits occur at Gellivara, Luossavaara, Svappavaara, and Kürunavaara, but these iron ores, in consequence of the difficulty of transport and the extreme sparseness of the population, have been little or not at all utilised. To the south of the belt are the celebrated deposits of Dannemora, &c., in Upsala län, and some mining fields within Stockholms, Södermanlands, and Ostergötlands län. There is besides, near the southern end of Lake Vettern, in Jönköping's län, an immense mass of iron ore—Taberg—besides which both the last-named and Kronoberg's län possess not inconsiderable supplies of lake and bog ores, which also occur, although in smaller quantity, in some other län. The iron ore deposits, although considerable, do not admit of a large annual production from each. Only water-power is available or, in the absence of fuel, practicable, and unless in exceptional years the prices obtained in foreign markets do not warrant attempts at extension. Coal occurs only in the most southern part of the country—in Skane and, possibly, southern Halland. The explorations recently made at Höganä's, in North-Western Skane, show that the coal is probably of lias formation; it is of poor quality, with much ash, and in seams only 2 ft. thick. Prof. Akerman considers it impossible that the iron manufacture can ever be great, as compared with other countries, as entire dependence has to be placed on the forests and peat mosses, and he points out that most frequently the forests and the iron ore deposits do not occur in the same district. For these reasons it is essential that attention should be confined to the production of iron of superior quality, and the quality must be unceasingly improved.

DEPARTMENT OF PUBLIC WORKS IN INDIA.

Our Eastern possessions are, *par excellence*, the land of jobs in the present and of unfulfilled promises in the future, and of a naturally consequent amount of fault-finding on the part of the victims of the evils that creep in in all directions when such promises have not been based on good faith, but frequently put forth with the view of attracting the unwary into a service that should be both acceptable to the servant and creditable to the master. There can be no doubt that the complaints made in almost every branch of the Indian service are well founded, and that the only means of obtaining redress is by appealing to the Press.

An instance of very prominent injustice has been brought to especial notice in a communication recently published in the columns of a contemporary whose proclivities are entirely Indian. We have been requested to reproduce this letter in our publication, with the view of assisting in giving it a more extended circulation, and should have done so with much pleasure but that its great length precludes the possibility of our doing so; but we have no hesitation in supporting the apparently well-founded allegations that are brought against the Government of India, both at Westminster and in Calcutta, in the hope that our doing so may assist in securing an enquiry into the evils that are increasing every day, and do something towards alleviating the hardships to which the officers of the department are now subjected.

These are ranged by the correspondent of Allen's Indian Mail, himself probably a sufferer from unfair supervision, and the one great breach of faith he specially dwells on, divides his complaints under five separate heads, premising, after giving a brief outline of the rise and progress of the department, that there are at the present moment no less than three classes of men from which the officers of the department are recruited. The first is based on a continuation of the system that prevailed from the very beginning, with sundry modifications as time wore on, and affords occupation to the gentlemen of the regular army, now transformed into a huge staff corps, who after, according to present rules, undergoing some training and examinations are made "civil engineers." The second originated as a resolution to hold certain competitive examinations in England as indications of the required proficiency, and they are known by the designation of "Stanley Engineers;" and, third, those sent out under the latest plan of the wonder-working kaleidoscope, representing no end of good things to come within the grasp of the aspirants to speedy promotion and early retirement after a fair number of years in the service.

The grievances under which the second class especially labour are thus briefly stated at the outset:—

1.—That though the advantages held out are the possibilities of rising to a salary of 3000*l*., these are for a very large percentage simply impossible.—2. That though they were told that they would obtain the grade of executive engineer, fourth grade, in usually six years, by far the larger number do not obtain it until nearer eight years than seven. 3. That, owing to the introduction of so-called five years covenanted engineers in 1868-69, their prospects of promotion have been lessened, as these men were brought in in the higher grade of executive engineer, after only having appointed assistant engineers, first grade.—4. That by reason of non-production of certain bonus schemes which have been under consideration for some years, a large number of Royal Engineers who would retire were they granted leave continue to stop the flow of promotion.—5. That by the illiberality of the Unrestricted Pension Rules men who would go after 20 to 25 years' service still remain, as they find it impossible to do so until 30 or 35 years' service.

The writer then proceeds to expatiate, at considerable length, on these several grounds of complaint, and makes out to any simple understanding a very plain matter-of-fact case, showing, beyond a doubt, that there has been a very marked breach of faith in the non-fulfilment of the expectations officially held out, and that the advantages promised to gentlemen proceeding to India after the spending of much time and money in duly qualifying themselves, under the impression that they would in a given period attain the rank and pay prospectively held out to them, are simply a delusion and a snare, which, once within the meshes of the net, they must accept at the price of the credulity that induced them to seek employment on the faith of promises, not one of which, however, has yet been fulfilled to the letter. We have, therefore, no hesitation in warning young men who may be turning their eyes in the direction of the Indian Public Works Department, to "Beware while it is yet time."

Meetings of Public Companies.

SOUTH CARN BREA MINING COMPANY.

A meeting of adventurers was held on Thursday, at the mine,
Mr. PIKE (the purser) in the chair.

The accounts showed:—On the debit side: To labour cost for 16 weeks, 1058*l*. 13*s*. 10*d*.; merchants' bills, 540*l*. 9*s*. 1*d*.; banker's charges, 29*l*. 18*s*. 11*d*., making a total cost of 1629*l*. 1*s*. 10*d*. On the credit side: To copper ore sold (55 tons 7 cwts.), 263*l*. 10*s*. 11*d*.; black tin (11 tons), 458*l*. 1*s*. 11*d*.—leaving a loss on the four months' working of 907*l*. 9*s*. The balance against the mine at the last account was 1124*l*. 14*s*. 10*d*., and this made a total adverse balance of 2032*l*. 3*s*. 10*d*. The call of 4*s*. per share at the last account produced 964*l*. 11*s*. 6*d*., and a balance of 1067*l*. 12*s*. 4*d*. was now shown against the adventurers.

The report of the managers was read, as follows:—

In the 164 fm. level west the last 25 fms. driven have been in the granite formation. The lode in passing through this rock, although it has yielded good stones of rich grey copper ore, yet lately has diminished in size, and has been surrounded with very hard rock. We have, therefore, been induced to put out a trial drivage on a small branch which diverged south at a point near the junction of the slate and the granite. We have extended west some 2 fms. on the branch referred to, and find that it has opened out to a fine looking lode, which is about 5 feet in width, composed of capel, fluor spar, and copper ore. This is, doubtless, the main, or copper, part of the lode, and looks very promising to speedily open out productive We consider this a very important feature in the mine. We have put up No. 5 trial rise in the back of this level some 3 fms. The lode in the highest point is without ore to value. The 164 cross-cut south is extended 20 fms. The ground is easy for driving. A small branch or two have been met with, but no lode of importance yet discovered.

The part of the lode carried in the 164 east is about 4 ft. wide, and is now yielding good copper ore interspersed throughout the lode, but not sufficiently thick to pay for working. The lode, however, has a most promising appearance, and shows good indications for a speedy improvement. The stope in the bottom of the 130 is worth 7*l*. per fathom. The stope in the back of the 150 is worth 10*l*. per fathom. The lode in the bottom of the 150 east is worth 10*l*. per fathom. We are obliged to pump up the condensing water from underground, which has greatly increased the engine expenses. In addition to this, the water we now use, being very corrosive, has injured the boilers very considerably, and completely worn away the condensing work at the engine. We have recently had to replace the condensing work in brass, in order to withstand the action of the water. The engine is now working well, and consuming less fuel than formerly. Looking at the kindly character of the lode in the 164 east, and at the improved appearance in the main part of the lode in the 164 west, we consider the prospects very cheering, and we hope soon to be able to report a good discovery in the mine.—WM. RICH, J. KNOTWELL."

The PURSER remarked that he had to appear before the adventurers to-day with accounts which showed a rather serious loss, but, considering that they extended over a period of four months, they were not so very serious after all. The present meeting was four weeks later than usual, the cause of it being that the copper ore sale came rather late in the quarter, too late for the usual time of their holding the quarterly meeting, and he thought it better to let the copper ore sale go on quarterly, and bring in a 16 weeks account. A call of 4*s*., similar to that of the last quarter, would, he thought, carry them through the next quarter, looking at things as they were, but he hoped that before the next quarter the mine would be in a much better position. He did not like to hold out any promises, but their prospects were certainly most encouraging, more so than they had been for a very long time.

Capt. RICH remarked that it had been very discouraging to see the main part of the lode in the mine dwindling away, but the improvement in the 164 fm. level had completely altered the state of affairs. The mine was now looking very fine indeed, and from a miner's point of view there was every prospect of a rich lode. In all human probability it would open out well.

The PURSER remarked that North Basset met with its rich lode in the 120 fm. level, and this would be about the level they were now making at the 164. It was just that time five years ago when South Carn Brea was looking exceedingly gloomy, and yet in six months they paid a dividend, and their prospects were not so promising then as they were now.

Mr. POOLE asked how many shares had been relinquished of late?—The PURSER: I have not heard a word of relinquishments.

The report was then adopted, and a call of 4*s*. per share made.

Mr. T. M. HAWKE desired that the rise in the 140 fm. level should be carried up to the 140, as there was rich virgin ground in the vicinity yet unexplored.

Capt. RICH expressed himself willing to do anything that would be to the benefit of the shareholders.

The PURSER remarked that there had been an absurd quotation of shares in the market, certain shares having been wilfully thrown into the market by an individual adventurer at 1*s*. per share. A better list of shareholders than they had in South Carn Brea could not be desired, but still such a wilful thing as he had referred to could not but have, in these times of depression, a bad effect.

Mr. T. M. HAWKE, as a large shareholder, expressed his confidence in the mine, and was glad to see that the leading gentlemen were holding on in it.

The PURSER: There has been but very little change in the list of shareholders and the large adventurers, and am glad to say all hold on.

CWM DWYFOR COPPER AND SILVER-LEAD MINES COMPANY.

A special general meeting of shareholders was held at the company's offices, Clement's lane, on Wednesday,
Mr. TURNBULL in the chair.

Mr. G. J. GRAY (the secretary) read the notice convening the meeting.

The CHAIRMAN explained that the present meeting was not a formal one, but the notice which they had received would have informed them the reason they were called together. The shareholders had been told that in consequence of want of funds they had been compelled to stop the works at the mine. Stewart's shaft was now down 9 fathoms 3 ft. 6 in. below the 10 fathom level, on No. 4 lode south, and Capt. Jewell, in his report dated the 13th inst., spoke most confidently as to the results to be obtained when this shaft is down a sufficient depth to enable him to drive a level on this lode, and to drive a cross-cut north to intersect No. 3 lode south at 10 fathoms below their present levels. By these means a considerable quantity of stoping ground will be laid open, and the directors, therefore, urgently appealed to the shareholders to provide the funds necessary to enable the company to continue operations. He was sorry they had nothing more pleasant to present to the meeting, but the fact was they had come to the end of their tether, and the question now arose what was to be done? For some time past the mine had been struggling on under great difficulties, until now they were absolutely without funds, and had outstanding 573*l*. for tradesmen's bills which must be met, and they had also temporary loans running amounting to 387*l*. 10*s*. and 160*l*. due for the last cost sheet to be liquidated, making 1120*l*. in all, the whole of which must be paid. As to the future, they could not expect to carry on for the next six months under 600*l*., but they would learn from the reports that that further expenditure was likely to put them in a good position. They had thus altogether 1720*l*. to provide for. That amount must be provided or the concern would be brought to a standstill; there could be no half measures. The object of the present meeting was to confer with the shareholders to see if they could devise some means of raising the money.

Mr. GREEN enquired what was the present state of affairs as compared with their position at the date of the last meeting, when he himself subscribed for further shares in the belief that the amount then raised would suffice to get them out of their difficulties?

The SECRETARY explained that the working expenses at the mine having continued the subscriptions then made had been absorbed. As to the affairs at the mine itself, there had been no change, except that they had been selling a few small parcels of ore They had a long report from Mr. Davies, F.G.S., of Oswestry, in which he said—"Stewart's shaft has to be taken down about 2 fms. deeper, and then the first thing to be done will be to drive a cross cut north to intersect No. 4 lode, which we expect will be done in a fathom or two. The level should then be taken westward along the lode to its junction with the caunter lode, about 8 fms. distant. While this is being done Capt. Jewell proposes, wisely as I think, for the lode looks well at that point, to sink a winze upon the junction of these two lodes in the 10 to meet the level, just proposed, below This would provide ventilation, and also stoping ground between the point and Stewart's shaft. While this is being done the cross-cut should be continued north until it intersects No. 3 lode. A short cross-cut from Stewart's shaft would also reach the caunter lode, and a short opening might be made to the east of the south cross cut in Nos. 4 and 3 lodes, and a level driven some fathoms west along No. 4. The cost of these works would be about 400*l*., towards which we may reasonably expect some amount of ore. They will prove the character of the lodes at the main points below the 10 fm. level workings. If, as we may hope, the lodes have improved in depth a considerable amount of stoping ground will soon be laid open, and with the stoping done at a less cost than in the hard rock above the mine may commence being remunerative To ascertain this result I would advise that all energies be directed to the foregoing works, suspending for the present all operations in the 10 fm. level workings. Except, until room can be found for the men below, you drive a little way, as proposed by Capt. Jewell, between the two lodes opposite the western end of No. 3 level. If when these works are done the lodes do not prove of a remunerative character it will become a matter for serious consideration whether the mine should be proceeded with." He had also obtained a report from Capt. Jewell. (This report was published in last week's *Mining Journal*.) He stated that they can get Stewart's shaft down to the 20 for about 25*l*., and that for the total works required at once 138*l*. would be wanted.

Mr. GREEN said they were told at the last meeting that 400*l*. would put them in a good condition, yet were now given quite different figures, the Chairman having explained that over 1700*l*. was wanted.

The CHAIRMAN reminded the meeting that he was only elected a director at the last meeting, but presumed that the 400*l*. referred to the sinking of Stewart's shaft, &c., and, if so, that amount would cover it.

The SECRETARY said they were formerly told that they were only scratching at surface, and would reach the best part of the lode only by going deeper. In April last, therefore, Stewart's shaft was commenced, and it was determined to sink 20 fms. They were now down 19 fms., nearly all of which had been in ore, and, judging from the appearance of the ground at the 10 fm. level, there would very soon be 9 fms. of good stoping ground available.

Mr. RHODES considered the shareholders were much indebted to the board for the advances of cash which they had made to the company, and suggested that the concern should be voluntarily liquidated by the present board, the directors undertaking to advance further funds to show that there was a possibility of working the mine to a profit, as it would then be easy to get others to come in to find the additional capital required.

Several directors said they thought it unreasonable to ask them (because they had already found money to assist the shareholders) to find more money, whilst the shareholders, who would reap an equal advantage with themselves, did nothing. The directors had contributed all they could contribute unless there were equal contributions from the whole of the shareholders.

Mr. TAYLOR said that the first thing he did after the last meeting, when he was appointed a director, was to go down to the mine. That there was 200 tons of ore broken and at surface he admitted, but to estimate its value at 2000*l*. was absurd. The only method he could see of carrying on the mine was to get fresh shareholders, and his friends did not feel inclined to take more shares under present circumstances. He proposed 6 per cent. preference shares, and as Messrs. Logan and Barton, who were directors and their largest creditors, gave their word that they would not press the company, he thought such shares could be placed. He visited a neighbouring mine, and was surprised to see the enormous quantity of ore they had in sight. It was estimated to be worth 20,000*l*., but the agent was hauling up a large engine through a thick forest to reach the mine, and every drop of water required for dressing, as well as every pound of coal for the engine, would have to be taken up the mountain. The Cwm Dwyfor, on the other hand, had good dressing and other machinery all ready, and ample water power for everything that could be required, with a line of railway up to the mine.

Mr. BARTON quite admitted that it was a pity to abandon the property, but if the money could not be found they must stop.

Mr. RHODES understood that they wanted 2000*l*. at once.

A DIRECTOR said that that amount was not required at once, but during the next six months. About 300*l*. was absolutely due.

The SECRETARY, in reply to a question, said that the dressing staff was still there dressing up the 200 tons for sale. The actual dressing cost was about 18*l*. per month. They required 350*l*. at once, and 150*l*. in a month. The idea of the directors was that if the 2000 unissued shares were subscribed for the payment could be spread over some time.

It was ultimately determined that an extraordinary general meeting should be called for considering a special resolution for the voluntary winding-up of the company, or for passing such other special resolutions as might be determined upon.

A vote of thanks to the Chairman terminated the proceedings.

WEST CRAVEN MOOR LEAD MINING COMPANY.

The adjourned meeting of adventurers was held at the mines, on Wednesday,—Mr. R. H. SILVERSIDES (a director) in the chair.

Mr. GRANVILLE SHARP (the secretary) read the notice convening the meeting.

The CHAIRMAN said—I much regret the absence of our chairman on this occasion, and that you should have so incompetent a representative. It is needless to remind you that this adjourned meeting is held because it was impossible to have the accounts for 12 months prepared in time for the meeting, which had to be legally convened for July, and your directors considered it better that this meeting should be held here (on the mine), in order that their fellow-shareholders should have the opportunity of inspecting the property, and of forming their own opinion as to its value, and, while it is very gratifying to find so many of the shareholders have been underground, we cannot but regret that there are not more present, because nothing is more pleasing to the directors than a good attendance of the shareholders, whose suggestions should, and would always, have their consideration. Your directors' report, which was sent to all the shareholders with the resident agent's report, was so thoroughly exhaustive that nothing more remains than to move the acceptance of the accounts and balance sheet as issued by the secretary. I have much pleasure in moving that the accounts and balance-sheet be received and passed.—Mr. LOVEDAY having seconded the proposition, it was carried unanimously.

The CHAIRMAN: If any gentleman has any observation to make, or requires any information, our very able and efficient managing director will have much pleasure in answering the same.

The shareholders then expressed their great gratification at the splendid prospects, and with a cordial vote of thanks to the Chairman the meeting was brought to a close.

The MANAGER, in answer to a SHAREHOLDER, said he should have 30 tons of ore for sale in about five weeks' time.

SOUTH WARD.—At a special meeting held last Wednesday, it was determined to suspend all operations at the mine, to sell by public auction the plant and machinery, to realise the assets, and finally, to wind up the affairs of the company. A sum of nearly 20,000*l*. has been expended in the last seven years in developing the property, where at one time there was every evidence of success.

HINGSTON DOWN.—A call of 1*s*. per share (900*l*.) was made at a meeting of the directors held last Tuesday.

[For remainder of Meetings see to-day's Journal.]

THE VAN MINES—MONTHLY REPORT.

Sept. 20.—As under please find my monthly report and setting list:—The 105 is set to six men, to drive west, by the side of the lode, at 120*s*. per fathom. We have completed the cutting and timbering of the lodge at the 105, and the men are now engaged driving a large cross cut south, in order to form a lodgment for the water; set to six men, at 150*s*. per fathom. By doing this we need only work the new pumping-engine during the daytime, as the said cross-cut will serve as a reservoir for the night water.

The 90 fm. level east: The cross-cut north, at the present end of this level, has proved the lode to be at that point 7 fms. wide, intermixed throughout with lead ore. We have now removed the men to cross north again, at a point about 11 fms. nearer the shaft, in order to prepare for opening up this section of ground; when they have accomplished this we shall resume the driving of the level east, although I do not care much about driving this end at present, and, being very wet, I am rather afraid of increasing our water before the new pumping-engine is ready; set to four men, at 160*s*. per fathom. The 90 west is extended 60 fms., worth for lead ore at present 50*l*. per cubic fathom. The ground in this end is very hard and spare for driving; set to six men, at 320*s*. per fathom. The winze sinking below this level, for the purpose of ventilating the 105, is down 2 fms.; set to six men, at 250*s*. per fathom. The stripping of the lode to full width in the side of the 90, west of shaft, is set to 12 men, at 90*s*. per fm., worth for lead ore 50*l*. per cubic fathom.

The 75, west of shaft, is extended 102¼ fms., and is now driving in the soft by side of the lode, by six men, at 100*s*. per fathom. We want to effect communication as soon as possible with the winze sunk below the 60, in advance of the end, to accomplish which we have about 11 fms. more to drive. The winze sinking below this level, at a point about 65 fms. west of shaft, is down 11 fathoms; set to four men, at 120*s*. per fathom. We have this month set to eight men to strip down the lode to full width eastwards from the 90 cross-cut, in this level, at 100*s*. per fm. The stripping of the lode to full width in the side of the same level, at a point about 75 fms. west of shaft, is set to eight men, at 100*s*. per fathom. These two points are worth upon an average 35*l*. per cubic fathom for lead ore. The 75 stope, in back of the same level, west of shaft, is set to six men, at 80*s*. per fathom. The 70 stope is set to eight men, at 80*s*. The lode in this section of ground is, on the average, 18 ft. wide, and worth for lead ore 40*l*. per cubic fathom. A rise for the purpose of affording better facilities for filling stopes has been set to four men, to put up from the 75 stope above mentioned, at 90*s*. per fathom. The 50 stope, in back of the 75, west of shaft, is set to eight men, at 60*s*. per fathom. The 40 stope, ditto, to eight men, at 60*s*. per fathom. The 30 stope, ditto, to eight men, at 65*s*. per fathom. The 20 stope, ditto, to eight men, at 62*s*. 6*d*. per fathom. The 10 stope, ditto, to eight men, at 70*s*. per fathom. These stopes are, on an average, 18 ft. wide, and worth 25*l*. per cubic fathom for lead ore.

The 60, east of shaft, is extended 72½ fms. in the soft by the side of the lode; we have 7½ fms. more to drive to communicate with the winze sunk below the 45; set to four men, at 80*s*. per fathom. The 40 stope, in the back of the 60, east of shaft, is set to eight men, at 70*s*. per fathom. The 16 stope, ditto, to eight men, at 65*s*. per fathom. The 8 stope, ditto, to eight men, at 65*s*. per fathom. The 16 stope, ditto, to eight men, at 65*s*. per fathom. The 32 stope, ditto, to eight men, at 65*s*. per fathom. The 48 stope, ditto, to eight men, at 65*s*. per fathom. The 56 stope, ditto, to eight men, at 65*s*. per fathom. The 64 stope, ditto, to eight men, at 65*s*. per fathom. The 72 stope, ditto, to eight men, at 65*s*. per fathom. The 90 stope, ditto, to eight men, at 65*s*. per fathom. The 100 stope, ditto, to eight men, at 65*s*. per fathom. The 115 stope, ditto, to eight men, at 65*s*. per fathom. These stopes are on an average worth 25*l*. 10*s*. per cubic fathom; average width, 15 ft. 6 in.

The 45 fm. permanent level is set to four men, to drive east of shaft, at 120*s*. per fathom. The 90 stope, in back of the 45, west of shaft, is set to eight men, at 75*s*. per fathom. The 80 stope, ditto, to four men, at 70*s*. per fathom. The 70 stope, ditto, to eight men, at 80*s*. per fathom. The 60 stope, ditto, to eight men, at 90*s*. per fathom. The 8 stope, east of shaft, to twelve men, at 75*s*. per fathom. The 24 stope, ditto, to six men, at 85*s*. per fathom. The 54 stope, ditto, to eight men, at 85*s*. per fm. Average width, 16 ft., worth for lead ore 23*l*. 10*s*. per cubic fathom.

Surface: All surface work is progressing regularly. Our sale takes place to-morrow, upon 500 tons of lead ore and 200 tons of blende.—WM. WILLIAMS.

IRON-SMELTING IN LINCOLNSHIRE.—A meeting was held at the Midland Hotel, Derby, on Wednesday, of the Lincolnshire Iron-Smelting Company (Limited)—Mr. F. C. Perry, chairman of the company, presiding. The works of the company are carried on at Frodingham, where there are others, under private management, which have been very successful. The company, however, have experienced an opposite fate, and this meeting was held with a view of placing its finances on an improved footing. It was resolved that Mr. Perry and two other directors should retire, and that Mr. S. J. Claye, of Derby, should fill the office of chairman, with power to select two gentlemen to occupy the other vacant seats at the board. As Mr Claye is a gentleman of great enterprise and energy, with a well-proved capacity to conduct a large mercantile undertaking, it is hoped that by his services the affairs of the company may be brought to a more favourable condition.

Baron Huddleston, acting for Vice-Chancellor Hall, has appointed George Chandler, of 15, Coleman-street, official liquidator of the Continental and Colonial Traders (Limited).

THE ALMADA AND TIRITO CONSOLIDATED SILVER MINING COMPANY (LIMITED).

DIOS PADRE AND MINA GRANDE.

DIOS PADRE MINE.—Capt Sprague, June 29: The adit level driving north produces occasional stones of ore; ground good for driving, but the air is bad, which makes it difficult for the men to work. The horse whim and shaft tackle are completed for the Dios Padre shaft, also the timber on the top of shaft for its further prosecution. We have to wait till timber arrives.

Frank W. Breach, June 29: For the past week the Dios Padre end going north has continued to improve. The lode is getting more compact, and we have carried ore with us all the week on the side of the level about 2 ft. in width. The ore as far as seen is almost a clean silver-lead. If it holds we will clean a sample and forward the assay value. In the Dios Padre shaft we have hands at work clearing the rubbish and getting it ready for timbering.

MINA GRANDE.—Capt Sprague, June 29: In this mine the shaft is sunk 28 ft. below the 12; ground favourable for sinking. The stope above the 12 is about 50 ft. in length; lode 9 ft. wide, and produces favourably.

Frank W. Breach, June 29: The Mina Grande 12 improves in the north stopes, and I have hopes we are at last getting above the disordered part of the lode. The last month's export samples show a very considerable improvement in ley, the B assays for silver $130 per ton, and the S $110; both show well for copper, but the assays are not yet finished. I am in hopes if the Mina Grande improves, as it promises, that should labour return in time we may be able to give a better account for the month of July. The June month cannot be otherwise than bad, as for the last week ending on the 24 we could neither get the ore brought from undergrond nor that which was cut cleaned and sent to the mill. In this way the expenses of stoping continue, while the ore broken remains unestimated. At present from the want of labour the mill can work but half-time, and in the mine in place of 70 Indian labourers we have but 15 in the 24 hours. The reason for our being so badly off for labour arises from the people in the town of Nabajoa having this year made a great Indian feast, and being only 15 leagues distant our Indians cannot withstand the temptation of going.

DIOS PADRE MINE.—Capt. Sprague, July 6: There is nothing new to report in the tunnel level north; stones of ore are sometimes seen in the lode.

Frank W. Breach: We are still driving north on the lode, and carrying stones of good ore with us; the ground continues to get harder and more compact as we progress. The shaft timber is not yet up from Agiabampo, to where I have sent one of our timbermen to cut into the required lengths for use to facilitate its transport.

MINA GRANDE MINE.—Capt. Sprague: The shaft sinking below the 12 is being deepened quite as fast as we expected. The stope about the 12 is without change.

Frank W. Breach: In the 12 stopes the ore gets more solid as we rise, but it lengthens but little towards the north, where we ought to have solid ore, being more than half limestone (qy. felspar); seeing the limestone continues between our north end and the old winze, we this week commenced to sink a winze in the tunnel level. We have but 40 ft. to hole to our rise in the 12, and I hope in five weeks to see it through. Although the ore in Mina Grande is more solid than any other we have, we can pick but little stone that will do to ship with that from the new east lode, as it at once lowers the ley. Suspecting this, I had a sample of perfectly clean ore—or at any rate one so free from non metallic matter that no concentration could make it cleaner—taken from the heap, broken small, and an assay made, which only gave 14 ozs. of silver per long ton. It is only fair to state that this was not a sample of the whole lode, but merely of its most solid and most leady parts—it contained only 16 per cent. zinc. All we can select are stones free from lead comparatively, which, although not so clean or solid, contain more copper and silver. To handle the above leady poor ore with a view to bring up the ley to export value would be useless, and for sometime Mr. Clemes has been devoting his attention to utilise the ore here, the object being to ascertain if this ore could be treated so as to get rid of some of its heavy ley of zinc, and smelt without too great a loss of silver. The result is that we have obtained a return sufficiently satisfactory to induce us to prosecute the investigation. Balvanera shaft is down 31 ft. below the 12; the ground is fair for sinking, and we are not troubled with water; unless you instruct me to the contrary, I shall not sink more than 10 fms. before cutting into the lode, as the disorder in the 12 may have produced changes which might at a greater depth involve a heavy expense in cross-cutting. Of course as soon as the lode is cut at the 22 we shall have the water in the shaft that is now pumped by hand from the 12, and as the lift is about half sunk it is quite time to provide for putting a pump in the shaft to be worked by the engine on surface. As the brace of the shaft is over 400 ft. from the tunnel level to put rods down the whole way would be expensive, and I think by connecting a wire-rope by a crank to the engine we can work a tob in the tunnel level, and hang the pump-rods thereto, and thus effect our purpose with a very little expense.

DIOS PADRE MINE.—Capt. Sprague, July 13: We expect the timber for the Dios Padre shaft in a few days; shall then set full number of men to work upon it. In the tunnel the ground is favourable for driving, with stones of low grade ore sometimes. A large air machine is being made for this place.

Francis W. Breach, July 13: The end in Dios Padre gets harder, and more likely for ore, and we still have balls of ore as we drive.

MINA GRANDE.—Capt. Sprague, July 13: We have to report the same as before from the stope 12 fm. level, a large lode, but too much blende to dress well. In the shaft below the 12 the men are pushing the sinking.

Frank W. Breach: Mina Grande now yields more ore, and we have the tramway in from the shaft, thereby reducing the expense of Indian labour. The winze from the tunnel is going down well in solid ore. The Balvanera shaft is down 34 ft. below the 12, and I have, as you will notice by the enclosed list of stores ordered, included a steel rope to work the pumps when we get to the 22, so that we may meet with no delay in cutting into the lode.

DIOS PADRE.—Capt. Sprague, July 20: Part of the timber is come for the shaft, and we expect the remainder shortly. The tunnel was idle a day or two in the early part of the week doing some repairs, but is now at work again; ground favourable for driving.

Frank W. Breach: The Dios Padre end was stopped a few days to clear the waste that had accumulated during the time the Indians were absent, and also to lay the track. We still have balls of ore in the end, but nothing solid.

MINA GRANDE.—Capt. Sprague: The shaft is now 6 fms. below the 12. No alteration in the rock in sinking. The stope above the 12 is suspended for a time; the men are putting up a rise to communicate with a winze sinking below the tunnel. This is partly for ventilation and for convenience in steping.

Frank W. Breach: In the Mina Grande 12 stopes we have met with a branch of solid ore a little to the north of the rise, and going to the west of our north works; as the ore increases as we drive, to avoid burying it with rubbish during the filling of the stopes before it is properly opened, we stopped the stopes, and confined ourselves to opening out the ore and pushing forward the rise.

DIOS PADRE.—Capt. Sprague, July 27: We have pleasure in saying the men have commenced work in the Dios Padre shaft; it is in better condition, as far as can be seen, than we expected; from the surface to 8 fms. below it will have to be re-timbered, then, to a depth of 40 fms. from surface, only occasional new timber; the remainder is full of rubbish, and, possibly, may have to be timbered anew. We think the shaft Mr. Petherick mentioned is further west than the above, and gone together. The tunnel end is passing through a band of disordered rock. We look for a change shortly.

Frank W. Breach: During next week I hope to see the air machine for the ventilation of the tunnel end in Dios Padre put to work, when we shall continue the cross-cut west, and also the east cross-cut in Mina Grande. At present, through the dull dead air of the rainy season and a low barometer, the air in the north end is very poor. The Dios Padre shaft is being stripped of the old rotten timber, preparatory to putting in the new, and work will now go on without intermission. Before making a report on the state of the shaft I desire to personally inspect it. At present Clemo is the only one who has been down, and if, as he believes, the timber at the bottom and for some distance up is in good preservation, and the ground not heavy, we shall be enabled to save by far the greater part of the anticipated expense of timbering, as well as push on the work more rapidly. Next week I shall give you all information on this.

MINA GRANDE.—Capt. Sprague: The shaft is being deepened as fast as possible. There is about 18 ft. more to reach the 22 fm. level. In the winze sinking below below tunnel there is a good lode. No change in the rise to meet this.

Frank W. Breach: The branch of ore I mentioned last week as being followed in the Mina Grande 12 fm. stopes died out into limestone (qy. felspar), and we are now working the stopes as before.

DIOS PADRE MINE.—Capt. Sprague, Aug. 3: The shaft is completed 8 fms. below the surface; the men are now preparing to go further down. At present there is nothing cheering in the Tunnel level, the rock being unfavourable for the production of ore.

Frank W. Breach: The air machine I hope to see go to work this week for the ventilation of the tunnel end. At 8 fms. from the surface, after taking out the old rotten timber, we put in two strong bearers, and have timbered up on these to the surface, and put in dividings and ladder-road; all is now complete to that depth. I have been down the shaft and carefully examined the ground and timber below where we have timbered, and have concluded that we can by effecting some few repairs leave in the old timber to a depth of 39 fms., to which depth the shaft is filled with rubbish; this will effect a saving in timber and labour of at least $1000, and probably more, as but little of the old timber could, if taken out, be used again. The ground, judging by what we can see of it from the surface, promises to be very easy for sinking; in fact, our hope is that it may not get too much so, and thus create expense for timber.

Telegram received from Mr. Breach, Aug. 29: "Dios Padre shaft cleaned up and timbered 180 ft. below surface. Dios Padre ore vein tunnel—end promising. The Mina Grande shaft is now down 120 ft. below the tunnel.

PROVIDENCIA.

Capt. Sprague, June 29: There is no change to notice in the Purisima stope—a very good lode.

Capt. Sprague, July 6: The Purisima stope is not quite so good this week.

Frank W. Breach: Providencia remains without change. The ore in the Purisima now makes home to the back of the slide, and lengthens south as we rise.

Capt. Sprague, July 13: The Purisima stope changes in value from week to week.

July 20: The Purisima stope is looking just the same as for some weeks past.

July 27: The Purisima stopes are not looking so well as we would like to see them, possibly it is a poor band of rock, which will soon wear out.

Aug. 3: The Purisima stopes have not produced well lately.

TIRITO.

Capt. Sprague, June 29: The Tirito engine shaft is sunk to the 42, and the cross-cut commenced towards the lode. We think it will take two months to do this. As soon as the water will permit the sinking of a winze north from cross cut below the 32 will be resumed. The above being important points will be pushed with the utmost vigour. There is no other point at work in this part just now, with the exception of a stope above the 10, north from shaft, at the point of junction between the new east lode and old Tirito black lode; the lode is about 3 ft. wide, and produces fair quantities of ore.

Capt. Sprague, July 6: The cross-cut east from shaft progresses favourably. The stope above the 10 does not produce so well as it did last week.

Frank W. Breach: The cross-cut from the shaft to the lode at the 42 is in easy ground, driving between 6 and 7 ft. per week. Next week we hope to cut the lode.

Capt. Sprague, July 13: The cross cut east from the shaft, the 42, is being driven rapidly.

Frank W. Breach: In the Tirito we are cross-cutting to the lode in the 42 in very easy ground, and expect to cut the wall daily. We have a double shift of men in the cross-cut, and they last week drove 8 ft. 7 in.

Capt. Sprague, July 20: The 42 cross-cut east is in the lode. By the end of the week we expect to commence driving on the lode course.

Frank W. Breach: In the 42 we expect to cut the footwall daily, when we shall drive to the north.

Capt. Sprague, July 27: The men are driving north at the 42; lode large, but without ore. The stope in the 10 fm. level is short, but we think it will lengthen and become more productive as it gets nearer the tunnel.

Frank W. Breach: In the 42 in the Tirito in cross-cutting to the lode we cut through the north slide, which here is only from 3 to 4 ft. in thickness, and by no means strong; the ground we meet in driving north is very easy, and rapid progress is being made.

Capt. Sprague, Aug. 3: In the 42, driving north, we have a few spots of green ore in the lode, and the rock appears to be somewhat harder. The water is not yet let down from the level above. The part of the stope (10 fm. level) working this week is narrow and poor.

Frank W. Breach: The cross-cut east in front of Tirito shaft, mentioned in my letter of July 20, looks more promising for ore as we get in. Having never had any lode south of the north slide corresponding to the new east lode, I think we have a good chance of meeting with ore.

NEW EAST LODE AND RED SOUTH LODE.

Captain Sprague, June 29: The stope on the New East lode is now about 80 ft. in length, and lengthens northwards as it ascends; it is now 11 fms. above the adit level; the lode is 8 ft. wide, and produces fairly. The stope on the Red South lode, also above the adit level, produces paying quantities of red, black, and green ores; it is near 9 ft. wide, and 70 feet in length.

Capt. Sprague, July 6: The stope on the New East lode, with the stope on the Red South lode, still give fair quantities of ore.

Frank W. Breach: The Red stope over the tunnel level is not up to the average. We are in a floor of poorer ground, similar to others we have met with before. Owing to this yielding a large amount of our green ore it has had the effect of lowering the ley of the patio ores from $40 to $28 per ton, but of course this is but temporary. The New East lode is also not so good in the stopes, but in the north end the level is lengthening and improving also. The month's samples vary from 4½ to 11 per cent. for copper, and had the Mina Grande ore been kept separate they would have been still better.

Frank W. Breach, July 13: The stopes on the New East lode, Red South lode, and 10 east change in value from week to week. The titles to the new east lode are now received, and are in due form. As I have previously mentioned, the Red lode, in the Tirito Mine, is making south, with a vein of fair green ore, and we expect it may pass the south-east point of the slide.

Capt. Sprague, July 20: The stopes on the New East lode are idle for a few days, while setting in timber and filling up with rubbish. The Red South lode still produces fair quantities of ore. The stope in the 10 is without alteration.

Frank W. Breach: In the Red lode we find that the north slide ends against the west wall of this lode, and we are now working 30 ft. south of the back or north side of the slide, but I believe it will, when reached, be found to cut off the lode to the south, and leave a head running through the ground, as it is of an extremely strong character, and I cannot think that it will die out. In consequence of this we have now commenced a cross-cut east in front of the engine-shaft in the tunnel, to strike under the south end of the Red lode, which will explore the ground, and also enable us to get out the ore from the lode to better advantage than at present. In consequence of the walls of the Red lode being so rotten and untrustworthy we have this week stopped working in the northern end (formerly New East lode) as originally having worked these two points as separate lodes the north end is much higher than the south, and we have now determined on stoping up the south end to the level of the north, in order to provide against our own old works to the west breaking through and filling the stopes with rubbish, as already has twice happened. This end of the New East lode turns out a fair quantity of green ore—say, half our supply; and if it holds I shall still look to the lode changing to green ore as we rise.

Capt. Sprague, July 27: The Red South lode is the most productive we have just now. The New East lode is filled up with rubbish, timbered, and the men set to work again. We are opening on this lode 8 fms. above the stope, but cannot speak of its value for a week or two.

Frank W. Breach: There is little to report, still the little is an improvement. For some time we have been cross-cutting east from our old Purisima works, and at a height of 20 fms. over tunnel level we have cut the north end of the New East lode 8 fms. to the east of the Purisima. The ore is black, and to all appearance the same as we have in the stopes. We are only 2 ft. into the lode with the cross-cut, and I can say nothing about the width of it until next week. As far as we can see it is a good indication that the lode holds upwards.

Capt. Sprague, August 3: It looks as if the stope on Red South lode will improve shortly. On the New South (qy. East) lode there is no improvement. The lode above this stope has not opened out as we could wish.

Frank W. Breach: The New East lode in the Purisima cross-cut has but 2 ft. 6 in. width of ore, but still it is quite sufficient to prove the existence of the lode at that height over tunnel level, and being at the extreme north point we need not expect as much ore as further south.

Telegram received from Frank W. Breach, August 29:—"The New East lode probably will continue on the other side of the great slide, and we shall at once cut through it to see if this is so or not."

EXCHEQUER AND I.X.L. GOLD AND SILVER MINING COMPANIES.

Some rich ruby silver ore has just been broken in the main adit at I.X.L. Upon examination we find it alive with ruby and black sulphurets, and a most congenial quartz. Certainly this is the best character of ore we have yet seen from the mine, auguring well for the grade of the reserves and the developments in the 200 ft. level. Both Mr. Chalmers and the foreman, Mr. Ferguson, are elated, if not excited. We purpose thoroughly examining this and the Exchequer Mine again before we leave, and will advise the result. The native silver in the 200 stope at Exchequer is opening out magnificently, if not increasing in value. The largest and richest stones were broken on Saturday last. The native silver is so free as to be distinctly seen by the naked eye, while ruby and black sulphurets permeate the entire rock. The samples you have in London convey an inadequate idea of the richness of the ore now being broken in the 200. Mr. Roach, the foreman, says, "There is no mine upon the Pacific Coast yielding ore of such richness." We should say upon assay it will yield $3000. The indications in the 200 face (to which we drew your attention in a previous letter) lead us to expect an early and important development. We have more than once minutely examined this point in connection with the general bearing of the ore-shute already discovered, and we shall be greatly disappointed if something of importance is not early discovered here.—F. W. MANSELL and Co.

The manager of the Exchequer Gold and Silver Mining Company (Aug. 28) writes—During the week ending Saturday the cross-cut at the 400 was driven 5 ft. by two men. On Monday (to-day) I shall be able to put on a double shift. The north drift on the 300 is in 181 ft.; in 30 ft. more I hope to strike rich ore. The stope at the 200 is now 65 ft. long by 37 ft. high; some very rich ore in the back, am still driving north. The north drift at the 200 ft. level was in 497 ft. from the engine-shaft; some fine white quartz in the face, with both light and dark ruby; shipped 60 tons of ore to the mill. The mine looking well all through. At the mill O'Hara has his furnace up 3 ft. The other alterations being pushed ahead rapidly.—LEWIS CHALMERS.

Messrs. Mansell and Parrick left on Saturday, much pleased.

The manager of the I.X.L. Gold and Silver Mining Company writes Aug. 28.—The shaft is now unwatered. The 200 ft. drifts are much caved, and it will take six days to clean them up. The steam pump is now fixed in its place at the 200, and the whole water column set and properly secured. The pump works well. The runners for the cage are all dressed down and ready to go in, but the bolts to fix them are not yet arrived, though ordered some time ago. I have two stopes started in the lower tunnel—No. 1, 117 ft. north of where I cut the lode, lode looks well, two men. No. 2, 165 ft. further north, shows good ore for 30 ft., that being the whole length uncovered: 3 tons of good ore on the dump from this stope. Obeying the instructions cabled by the board, I yesterday concluded a contract with the Vulcan Ironworks for a 20-stamp first-class mill, eight pans (Wheeler), four 8-ft. settlers, two large agitators, two Knox clean-up pans, the necessary buildings, a boarding house and blacksmith's shop, of which I shall send you drawings and specifications shortly. I am trying to make a contract with O'Hara for a furnace.

FOREIGN MINES.

CAPE COPPER MINING COMPANY.—At a meeting of the directors of this company, held on Wednesday, a dividend of 1d. per share, free of income tax, was declared.

ST. JOHN DEL REY MINING COMPANY (Limited).—Advices received Sept. 1, 1876, ex Guadiana (s.), dated Morro Velho, Aug. 1:—

GOLD EXTRACTED TO DATE.—The produce extracted during the second division of July, being a period of ten days, amounts to 14,557·3 oits. It has been derived as follows:—

	Oits.		Tons.	Oits. per ton.
General mineral	6,354·0	from	1175	= 5·407
Mineral roughly freed from killas	7,266·0	,,	660	= 11·009
	13,620·0		1835	7·442
Re-treatment	937·3	,,	—	= ·510
Total	14,557·3	,,	1835	= 7·932

Equal to .....1678·2196 ozs. troy = ·9091 ozs. troy per ton.

The above produce is the result of 10 days stamping with 135 heads, which worked an average of 23·72 hours per diem. Stamping per day 183 tons, and giving a daily produce of 1455 oits.

Advices received Sept. 16, 1876, ex Douro (s.), dated Morro Velho, Aug. 17.

GENERAL OPERATIONS.—During the past two weeks the usual mining and reduction operations have been continued with considerable regularity, and fair duty in proportion to the motive power available has been accomplished in both the surface and mining works. The mineral quarried and raised to the surface has been sufficient for the requirements of the stamping mills.

MINE DEPARTMENT.—The quarrying of the lode, but more especially the stoping down of the poor mineral left at the sides, is progressing satisfactorily. The arrears of timberwork have had a good force engaged on it, and a considerable amount thereof has been done up to date. A little sinking and driving eastward at the sump is being accomplished. The pumps are acting well, and the hauling power for the present seems quite equal to raise the desired quantity of ore for the spalling floors, where a small stock of mineral has already been accumulated.

PRODUCE FOR THE MONTH OF JULY.—The produce extracted during the month of July amounts to 41,362·3 oits. It has been derived as follows, viz.:—

	Oits. per day.		Tons.	Oits. per ton.
From general mineral	18,814·0	from	3395	= 5·541
,, ore freed from killas	19,958·0	,,	1954	= 10·212
	38,769·0	,,	5349	= 7·247
Re-treatment	2,593·3	,,	—	= ·484
Total	41,362·3	,,	5349	= 7·731

= 4768·4003 ozs. troy = ·8914 oz. per ton.

It may be seen there have been 5349 tons of mineral reduced in the month of July (31 days), whereas we only pulverised 4756 tons in June. The standard yield per ton is very nearly the same, June being 7·787 oits. and July 7·731 per ton.

It may be observed that a large proportion of the mineral treated, 3395 tons, was poor, giving only 5·541 oits. per ton. The greater part of this poor mineral was cleared down from the sides of the excavation. The mineral roughly freed from killas gave, as may be seen, 10·212 oits. per ton. The sand amalgamated amounted to 6384 cubic feet, which gave an average yield of gold of 6·47 oits. per cubic foot.

COST AND PROFIT.

The produce being	41,362·3 oits.		
Deduct loss in melting	298·2 ,,		
	41,064·1, at 7s. 9d. per oit. =	£15,912	6 9½
Cost		6,754	3 9½
Leaving a profit for July of		£ 9,158	3 1

The cost is about the average, but the smaller produce extracted than in some months past show a less profit, though it is more than was obtained in June.

GOLD EXTRACTED TO DATE.—The produce for the first division of the month of August, being a period of eight days, amounts to 10,019·3 oits. It has been derived as follows:—

	Oits.		Tons.	Oits. per ton.
From general mineral	5577·0	from	798	= 7·006
Ore partly freed from killas	4788·7	,,	470	= 10·188
	10,365·7	,,	1266	= 8·187
Re-treatment	653·6	,,	—	= ·516
Total	11,019·3	,,	1266	= 8·703

Equal to..... 1270·3459 ozs. troy = 1·003 oz. per ton.

This shows a rather better yield from the ore treated, but the proportion of poor mineral still continues very great.

There is not now much more to take down from the sides of the excavation.

The gold troop was dispatched from Morro Velho on August 14, taking 16 boxes containing 48 bars gold weighing in all 76,551·1 oits., being equal to 735·4224 lbs. troy, for shipment per Douro.

N.B.—The gold has duly arrived.

The following telegrams have been received:—On Aug. 28—"Produce eight days (first division of August), 11,000 oits.; yield 8·7 oits. per ton. Profit for the month (July), 9100£."

On Sept. 4—"Produce 12 days (second division of August), 14,750 oits.; yield, 7·7 oits. per ton."

On Sept. 13—"Produce for month (August), 39,000 oits.; yield, 7·6 oits. per ton."

RICHMOND CONSOLIDATED.—Telegram from the mine at Eureka, Nevada: Week's run, $50,000, furnaces being under repair. All now running.

— Rickard, Aug. 25: The 800 ft. drift is not yet holed to the winze sunk from the 700. We have made very slow progress on account of insufficiency of air. We can only work at intervals in the 800, and we cannot have much more ground to get through before making the communication. The Lizette tunnel has gone through a very hard bar of rock, and we are now about under the winze sunk from the workings on the west side of the hill. We shall begin raising to make the communication in a day or two. The stopes are all looking well, and the high stope started from the 600 ft. level is now up 140 ft, which is 40 ft. above the 800; it is a magnificent body of ore, and it appears to be part of the body of ore worked on in the 500, divided by a horse of limestone, and to all appearances this will make up to the 400, and probably above. The ore we are taking out of this stope is good smelting ore, carrying about 25 per cent of lead. All other parts of the mine are about the same as last reported.—Smelting: Our returns this week will be less than last on account of our boilers being out of repair. I was obliged to bank up the Nos. 4 and 5 furnaces (hydrocycles) until we could repair one boiler. When we opened the boilers we found the tubes in a very bad state. On the back end the tubes had a scale of three-eighths of an inch thick, which prevented its steaming. If we had not lost time this week from slack blast the returns would have been larger than any heretofore cabled. When we get the boilers in good trim again we shall make up for lost time.

— R. Rickard, Sept. 1: The 800 drift is not yet holed to the winze; very little work has been done in either of the drifts during the past week. The 700 drift is being driven to the south-east to get under the ore dipping in that direction from the stope in back of the 600; the ore being worked on in the 700 stope appears to be only a part of the ore body, and we have reason to expect a large body of ore more to the south east than the present chamber being worked; the drift is now in soft lime shale—easy for driving. Lizette is in to the bottom of the winze, and a rise started to make communication with the winze. The high stope is opening out within the last two months; it is now above the 500 level 50 ft. We have set a contract on the 400 level to drift towards the ore making above the 500; if the ore makes up on the usual incline we shall have to drift over 200 ft. to strike it. The mine is looking well, the reserves of ore have increased to a great extent within the last two months.—Smelting: We have had several drawbacks this week, which will diminish the weekly returns; the first we had was the cleaning of a second boiler, which made it difficult to raise steam enough to get sufficient blast; after we got the boiler to work we had trouble with our main pulley, which stopped the furnaces for 12 hours; this, with several other little misfortunes, will be the means of lessening this week's produce. All is again in good working order, and going on smoothly. We have began the stock taking, and will finish it in good time to forward to you.

CHICAGO (Silver).—Telegram from the superintendent of the mine: Net profit for last month, $12,000.

FULLER'S REEF.—The directors have received the following from their mine manager, dated July 19:—From the 16 tons passed through the machine we obtained 38 ozs. of retorted gold, being at the rate of 2 ozs. 7 dwts. 12 grs. per ton.

DON PEDRO.—Extract from mine captain's report for July: Stoping: No. 6 Shoot: In No. 2 stope, see section 71, the lode is large, and produces a great quantity of moderate work. We have commenced another stope south of No. 2, which will be No. 3. The incline rise in the southern part of this shoot, section 71, being continued with a small force towards the 25.—No. 8 Shoot: In No. 3 stope, section 70, the lode is of a fair size and a moderate quality. No. 4 stope, section 71, part of the lode is also moderate in quality, but very little more can be done at this point until deeper drainage. In No. 5 stope, section 70, the lode is large, and of a moderate quality. In No. 6 stope the lode is of a moderate size, but not so good as the other stopes referred to in section 51. In No. 7 stope, section 51, the lode is poor. All of these stopes are approaching the bottom of the 35 fm. level cross-cut. The two pillars of ground in Alice's west, section 48, is being continued, which has assisted us a great deal towards our output. The narrow slip of ground which is shown on section 48 is taken from the bottom of No. 3 incline in Alice's west; this pillar is very narrow, but fair in quality.—Explorations in Mine: On the 18th we commenced an exploring level in Alice's west, section 48, from the incline rise risen from the middle level, section 30, samples have been taken showing gold. Very little has been done in the western driving, therefore no measurements are shown.

— Aug. 17: Stoping: No. 6 Shoot: The No. 2 stope is approaching near the horizon of the 35 fm. level cross-cut; the lode is large, and of a moderate quality; it appears to us that this shoot of lode is improving as it descends, and stoping ground is widening. In No. 3 stope the lode is not so large as the stope referred to, but it is of a moderate quality. The incline rise in the southern part of this shoot is now producing saving work.—No. 8 Shoot: No. 3 stope also has improved in quality; the lode is large, now producing fair general work. No. 4 stope is suspended for want of deeper drainage. Nos. 5, 6, and 7 stopes are being continued without change, also the two pillars of ground in Alice's west as being worked on as usual.—Explorations in Mine: On the 8th, we commenced an exploring rise in Alice's west. On the 14th we commenced to drive north from the new exploring level in Alice's west to go to Symon's shaft, as the old level have become very much out of repair.

CEDAR CREEK (Gold Mines and Washing).—The following advices from the superintending manager, Colonel B. Ludlum, Aug. 31, have been received:—The Yankee tunnel is still being driven as rapidly as possible. During last week we were obliged to make some alterations and do some repairing, so that we only worked at tunneling eight shifts. We fired five face shots and advanced 26 ft. The Baker shaft was worked by a full crew of men, but owing to the necessity of timbering the gravel near the bed rock, which occupied a good portion of the time, we only sank 9 feet. This, however, took us to a depth of 100 ft. The rock is now favourable, and I feel confident that we can complete it by the time the tunnel reaches that point.

SANTA BARBARA (Gold).—Mr. Hilcke Pari, Aug. 12: During July 1111 tons of mineral were stamped, yielding 3663 oits. per ton, or a total of 4071 oits. of gold, which, valued at 8s. 6d. per oit., amounts to 1731l. 0s. 6d. as the estimated value for the produce or the month. The mine working cost for the same period was, at Exchange 25½d., 997l. 7s. 11d., thus leaving an estimated profit of 733l. 12s. 7d. for July. The capital expenditure during the month for No. 1 stamps and Senzala amounted to 95l. 1s. 9d.—Stope No. 1: The lode is at present contracted, and the mineral of rather low quality.—Stope No. 2: The lode is from 5 to 7 ft. wide, producing good quality mineral.—Stope No. 3: The lode still maintains its strength and quality.—No. 1 Shaft: This shaft has been sunk 4 feet on the course of the lode during the month. The lode has not yet regained its former underlie, but has become more mineralised and promising in appearance. Stoping has been continued north and south of this shaft, the lode in the north stope being 5 to 6 ft. wide, producing middling quality mineral. The lode in the south stope is from 6 to 8 ft. wide, of good quality. The quantity of ore raised during the month amounted to 1347 tons, of which 235 tons were rejected as refuse stone, and 1112 tons treated at the stamps. Average quantity of stone raised per borer for the month 29·9 tons. Water supply good.

A MINIATURE RAILROAD TRAIN.—Some years since there was brought to the notice of the adventurous English public a pleasure road locomotive, designed, we were informed, by the Duke of Sutherland. The idea has been recently adopted in America by Mr. A. Noble, of St. Louis, who has manufactured one which is stated to be excellently adapted for the use of railroad division superintendents, road masters, and others whose duty requires them to make frequent inspection of railway lines. The machine resembles an ordinary hand car except that the propelling power is steam and not muscle. The floor is about 1½ from the ground, and is beneath instead of above the axles. The boiler, which is about 3½ ft. in height, with a diameter of 18 in., is placed in the centre of the car, while the cylinder, which is horizontal, is at the right-hand side and near the front. The cylinder is 3½ by 6 in. and the boiler is intended to carry a pressure of 100 lbs. of steam. The body of the vehicle rests on rubber springs, and is said to ride easily without lateral motion. Seats are arranged in front and rear, of sufficient size to accommodate six persons. The water tank occupies a space under the front seat, and holds about a barrel of water, which is sufficient to run the coupled miles. On the left of the boiler the coal pan is arranged in a space about 2 ft. and carries all the fuel necessary for a day's run. On a recent trial trip the car distance of seven miles) was made in 15 minutes. The inventor states that under ordinary circumstances the cost of fuel will not exceed 3s. per day. It may possibly be suggested that protection for "steersman" and accompanying might easily and cheaply be provided. Add this to the design and we are to give thanks to the original inventor and the last introducer.—*Design and*

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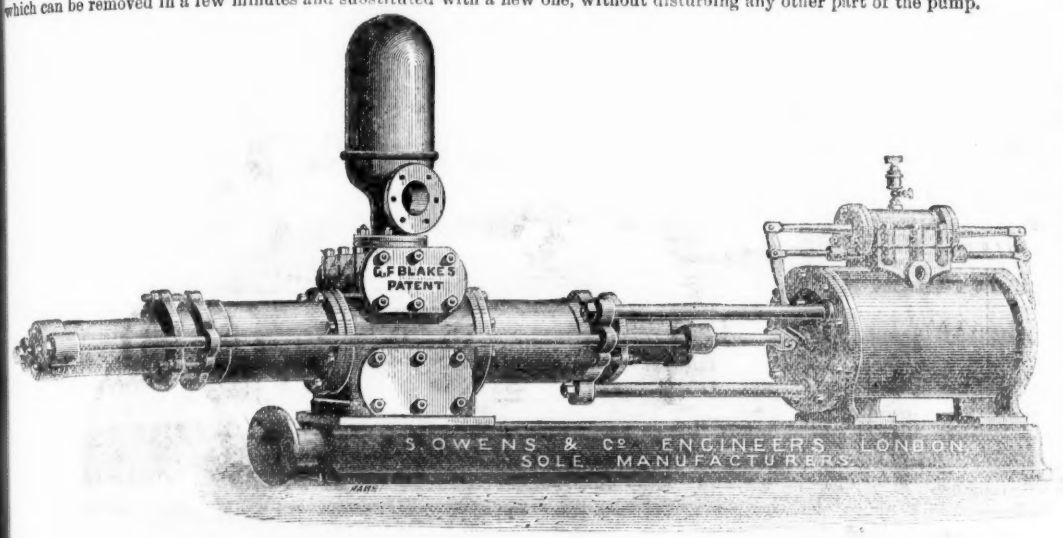

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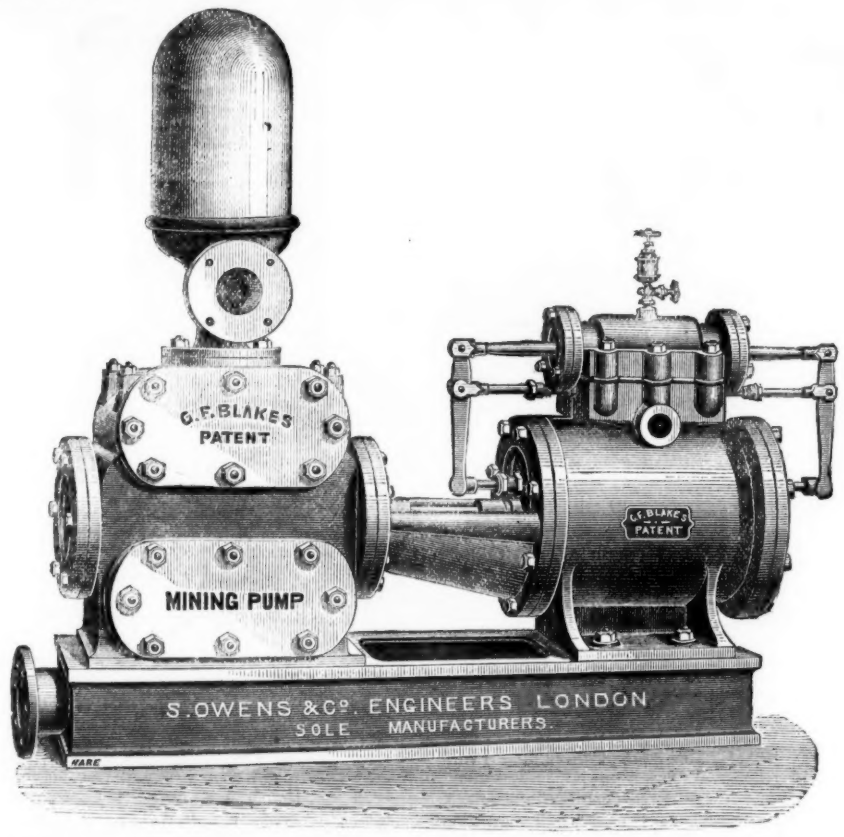

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Dia. of steam cylinders.. In.	12	12	12	12	14	14	14	16	16	16	16	18	18	18	18	20	20	20	20	24	24
Dia. of water cylinders.. In.	3	4	5	6	4	5	6	4	5	6	8	4	5	6	8	5	7	8	9	6	8
Length of stroke ..... In.	18	18	18	24	24	24	24	24	24	24	24	24	30	30	30	30	30	36	36	36	42
No. of strokes per minute..	30	30	30	25	25	25	22	22	22	22	22	22	22	22	22	20	20	17	17	17	15
Capacity in gallons per hour, approxmately ...	1440	2610	4200	5940	2940	4620	6600	2646	4158	5940	10620	2646	5160	7500	13260	4586	9000	12360	15660	6720	20

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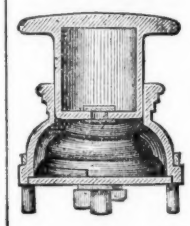

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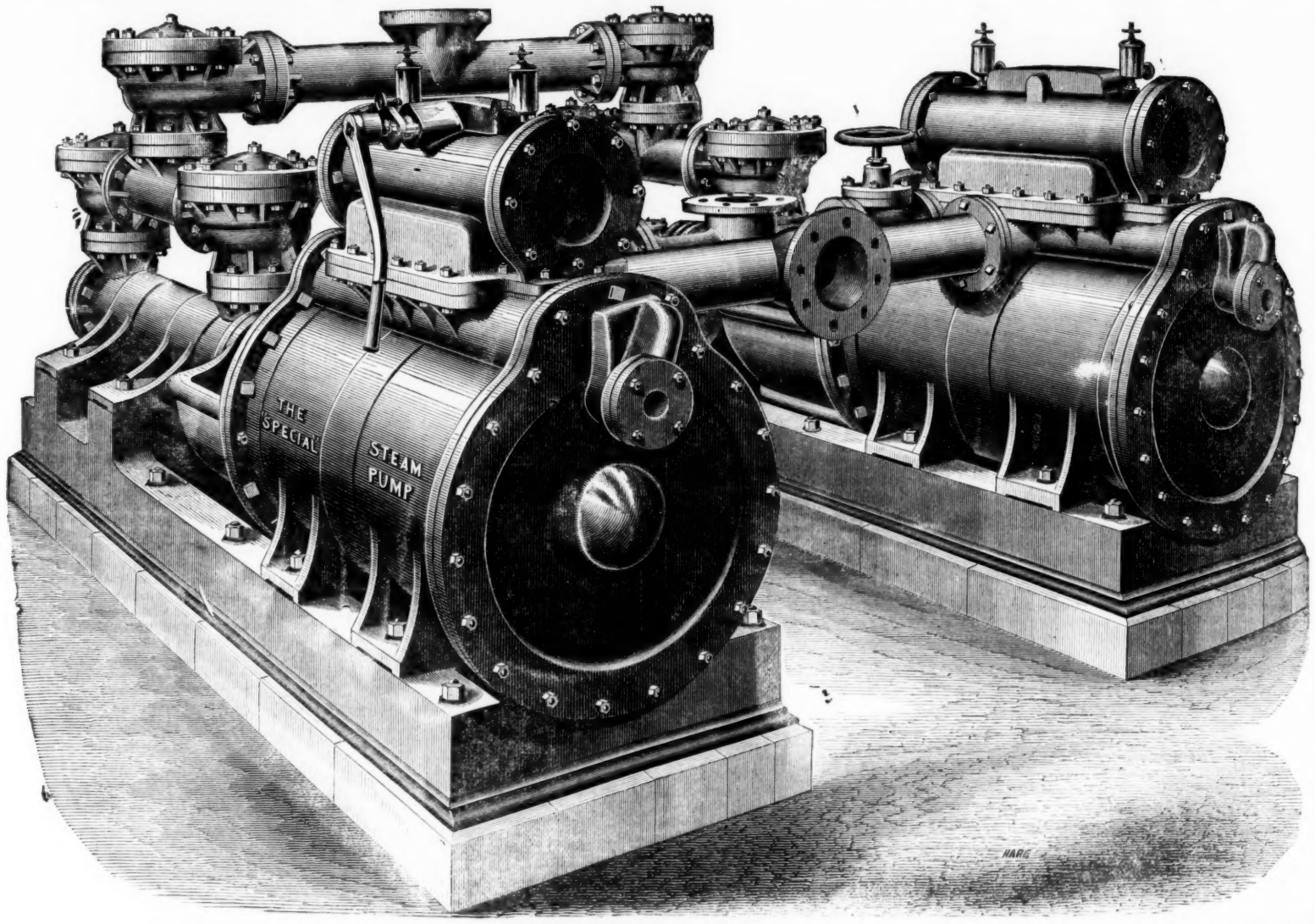

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The following extracts from a letter, received by Tangye Brothers and Holman, from J. Bigland, Esq., dated Feb. 25, 1875, refers to a "Special" Direct-acting Steam Pumping Engine supplied four years ago to Messrs. Joseph Pease and Partners, for the Adelaide Colliery, Bishop Auckland. The engine is throwing about 8000 gallons per hour, 1040 feet high, in one direct ilft:—

"The underground pumping engine at Adelaide Colliery is working night and day. It does its work satisfactorily, and gives us very little trouble. Some of the cup leathers which form the plunger packing have worked three months. The working barrel is in beautiful condition. The average duration of the valve seats is about eight months; they work and keep tight as long as there is a bit of them left. I expect the valves (Holman's patent) and the buffers will last as long as the colliery."

Extract from a letter received by Tangye Brothers and Holman from W. H. Eagland, Esq., dated Feb. 27, 1875, in reference to a "Special" Direct-acting Steam Pumping Engine supplied two years ago to the West Yorkshire Iron and Coal Company near Leeds, to throw 16,000 gallons per hour, 465 feet high in one direct lift:—

"It is at work night and day. Our man goes down to the pump twice a day (Ten A.M. and Four P.M.), to supply the tallow cups. After this it is left every day till he comes next morning, when he goes down again at Ten A.M. as before. The only repairs the pump has had for 12 months are one bucket, which had worked since we got the pump, and one valve seat, but no valve, so it has cost very little. Its first lift is 70 yards perpendicular, then the water passes up pipes for half a mile, ascending another 70 yards, and then another perpendicular pipe of 15 yards —total, 55 yards vertical height.."

Extract from the Official Report of the Commission of the Germ... Empire on the Vienna Exhibition of the 1873, treating on Pump... Engines:—

"Contrary to these older pumping engines exhibited, there is now nearly ev... where the opinion established that the ('SPECIAL') pumping engines placed ... derground, which are made on A. S. Cameron's principle by Messrs. Tangye, ... preferable to all. They do much duty combined with great compactness. T... dispense entirely with the troublesome rod arrangement, giving often rise to ... pages, so that they will be applied shortly to a great extent, and are already ... in many localities. There is no doubt that this is in every respect practical sy... will command a general adaptation."

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Diameter of Steam Cylinder .....In.	7	8	9	9	10	10	12	12	12	14	14	14	16	16	16	16	18	18	18	18	21	21	
Ditto of Water Cylinder .....In.	3	3	3	4	3	4	3	4	5	4	5	6	4	5	6	7	5	6	7	8	5	6	
Length of stroke.....In.	24	24	24	24	36	24	36	36	36	36	36	36	36	36	36	36	48	36	36	36	48	48	
Gallons per hour approximate	1830	1830	1830	3250	1830	3250	1830	3250	5070	3250	5070	7330	3250	5070	7330	9750	5070	7330	9750	13,000	5070	7330	
Height in feet to which water can be raised with 40 lbs. pressure per sq. in. of steam or compressed air at pump	325	425	540	300	665	375	960	540	345	735	470	330	960	615	426	312	775	540	400	300	1058	740	

CONTINUED.

Diameter of Steam Cylinder .....In.	21	21	21	24	24	24	24	24	26	26	26	26	26	30	30	30	30	30	32	32	32	32	
Ditto of Water Cylinder .....In.	8	9	10	6	7	8	9	10	7	8	9	10	12	8	9	10	12	14	8	9	10	12	
Length of stroke.....In.	36	36	36	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	48	
Gallons per hour approximate	13,000	16,519	20,000	7330	9750	13,000	16,519	20,000	9750	13,000	16,519	20,000	30,000	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	
Height in feet to which water can be raised with 40 lbs. pressure per sq. in. of steam or compressed air at pump	413	326	264	960	700	540	427	345	827	633	500	405	282	840	665	540	375	275	960	758	625	426	

PRICES OF THE ABOVE ON APPLICATION.—FOR SIZES AND PRICES OF PUMPS FOR LOWER LIFTS SEE SEPARATE LIST.

HOLMAN'S PATENT CONDENSER will be found a great acquisition to all kinds of Steam Pumps, as not only is the exhaust steam completely condensed, and the annoyance from ... blowing off entirely got rid of, but a vacuum is obtained in the steam cylinder saving from 20 to 50 per cent. in fuel, and increasing to a considerable extent the economy and efficiency of the Pump.

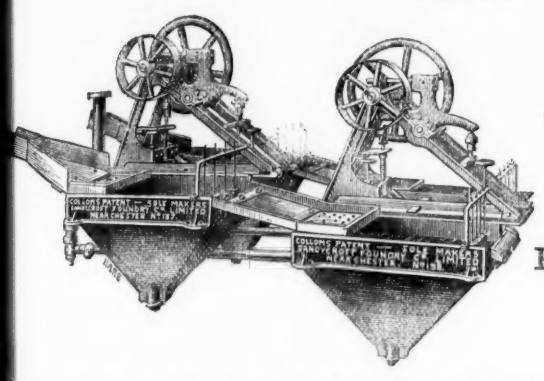
NORTH OF ENGLAND HOUSE ... ... TANGYE BROTHERS AND RAKE, ST. NICHOLAS BUILDINGS, NEWCASTLE-ON-TYNE.
SOUTH WALES HOUSE... ... ... TANGYE BROTHERS AND STEEL, Tredegar Place, NEWPORT, Mon.; and Oxford Buildings, SWANSEA.

PATENT IMPROVED ORE WASHING & DRESSING MACHINES.

THE SANDYCROFT FOUNDRY & ENGINE WORKS CO. (LIMITED), NEAR CHESTER

LATE THE MOLD FOUNDRY CO. (ESTABLISHED 1838).

SOLE MAKERS IN GREAT BRITAIN.



HUNDREDS IN USE.

FULL PARTICULARS,
PHOTOGRAPHS, TESTIMONIALS, AND PRICES,
UPON APPLICATION.

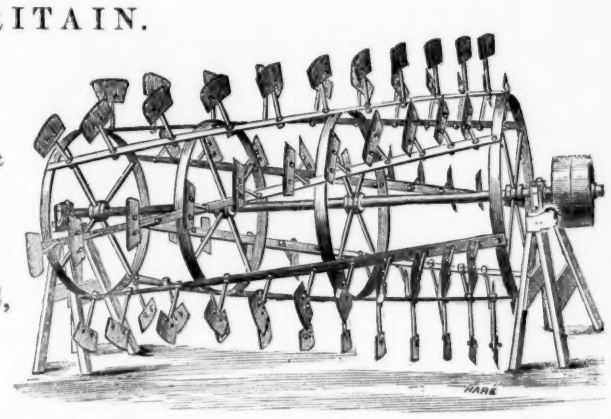
Will supply Designs, and all the necessary Plant for laying out Dressing Floors; also

MANUFACTURERS OF EVERY VARIETY OF

MINING MACHINERY.

PUMPING & WINDING ENGINES,

PITWORK, CRUSHING MILLS,
ROLLS
OF PECULIARLY HARD AND TOUGH MIXTURE
&c., &c.



COLLOM'S PATENT AUTOMATIC ORE WASHING MACHINE, working at the following and many other Lead, Copper, Blende, and Tin Mines:—Great Laxey, Cape Copper, Pontgibaud, Linares, Alamillos, West Tolgus, Lisburne, Minera Halvans, Snailbeach, &c.; and also at Messrs. Vivian and Sons' Works, Swansea.

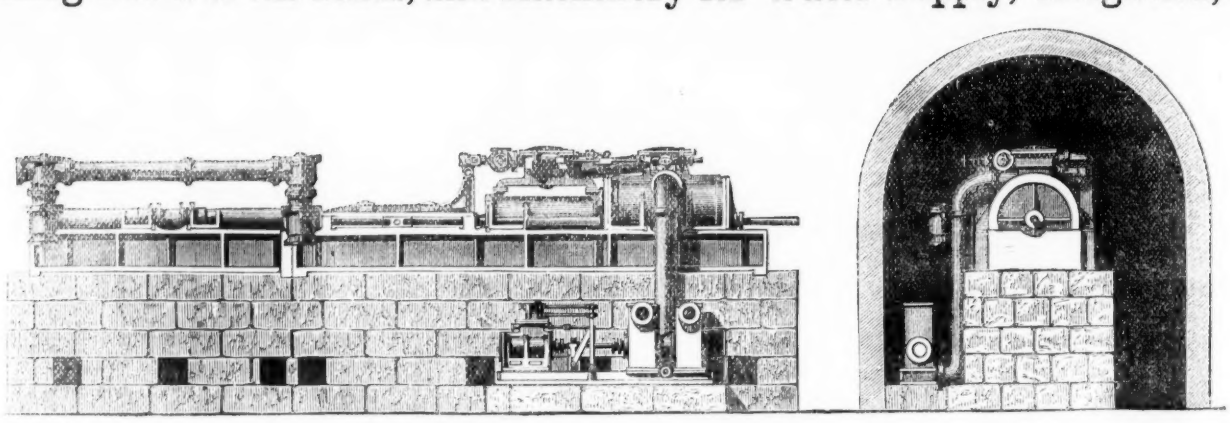
PATENT IMPELLER, OR KNIFE BUDDLE, in use at the following and many other Lead, Copper, Blende, and Tin Mines:—The Van, Roman Gravels, Tankerville, Ladywell, Lisburne, East Black Craig, Old Treburgett, Penhale & Barton, Bog, Linares, Fortuna, Alamillos, Minera Halvans, &c.

LONDON OFFICE: 6, QUEEN STREET PLACE, E.C.

HATHORN, DAVIS, CAMPBELL, AND DAVEY,

MAKERS OF

The Differential Pumping Engine, Hydraulic Pumping Engines, Cornish Engines, Differential Blowing Engines, Compound Rotative Engines, the Separate Condenser, Hydraulic Machinery, Mining Plant of all kinds, and Machinery for Water Supply, Irrigation, &c.

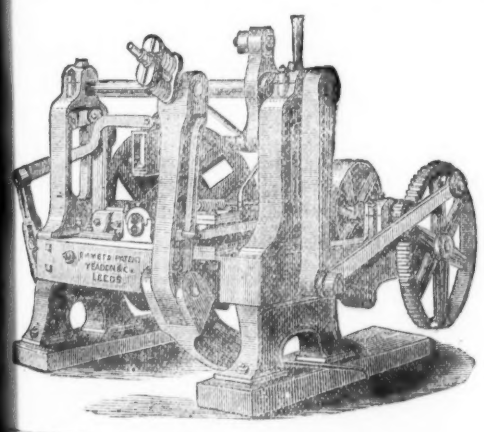


THE COMPOUND DIFFERENTIAL ENGINE AND FORCE PUMPS,

With Separate Condenser, as applied Underground, forcing 700 gallons per minute 920 feet high.

SUN FOUNDRY, LEEDS.

FURTHER PARTICULARS ON APPLICATION



EMMET'S

A1 PATENT BRICK MACHINE.

Massive; durable; cheap; takes little power, and gives PERFECT SATISFACTION.

This is the ONLY Machine which presses the Brick equally on BOTH sides, each plunger entering the mould plate ⅜ in., and turning out 12,000 SQUARE, SOLID, PRESSED Bricks per day, READY AT ONCE FOR THE KILN.

SOLE MAKERS—

YEADON AND CO.,

CROWN POINT FOUNDRY, LEEDS.

Makers of EVERY DESCRIPTION of Colliery and Brick Yard Plant.

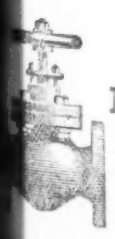
LONDON AGENTS—
HAUGHTON AND CO., No. 122, CANNON STREET, E.C.
CONTINENTAL AGENTS—
PLAMBECK AND DARKIN, 171, QUEEN VICTORIA ST., E.C.

ARTESIAN BORINGS

For WATER SUPPLY to TOWNS, LAND IRRIGATION, and MINERAL EXPLORATIONS, may be executed of any diameter, from 6 in. to 36 in., and to any depth to 2000 ft.,

Pistons & Air-pump Buckets fitted with Patent Elastic Metallic Packing

of which upwards of 8684 have been made to March, 1875.



MATHER AND PLATT,

MAKERS OF LARGE PUMPS AND PUMPING ENGINES.

Improved Valves and Taps for Water, Steam, Gas, &c.

PATENT STEAM EARTH-BORING MACHINE

ENGINEERS and MACHINE MAKERS to CALICO PRINTERS, BLEACHERS, DYERS, and FINISHERS.

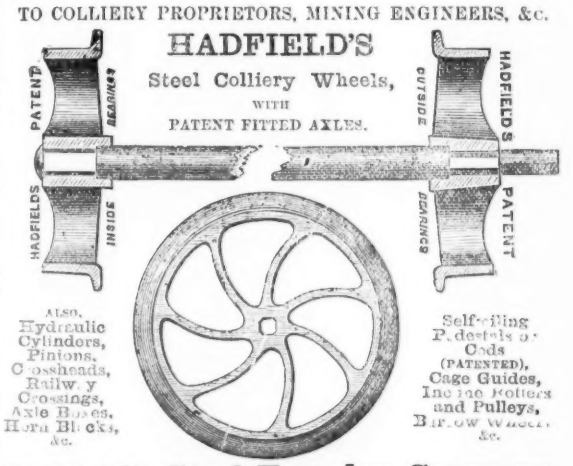
SALFORD IRONWORKS, MANCHESTER.

PRICES AND PARTICULARS ON APPLICATION.

TO COLLIERY PROPRIETORS, MINING ENGINEERS, &c.

HADFIELD'S

Steel Colliery Wheels,
WITH
PATENT FITTED AXLES.



ALSO,
Hydraulic Cylinders, Pinions, Crossheads, Railway Crossings, Axle Boxes, Horn Blocks, &c.

Self-oiling Pedestals or Cods (PATENTED), Cage Guides, Inclined Rollers and Pulleys, Bridge Wheels, &c.

Hadfield's Steel Foundry Company,

MANUFACTURERS OF EVERY DESCRIPTION OF

CRUCIBLE CAST STEEL CASTINGS.

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The following few testimonials, out of hundreds in Mr. Hopton's possession speak to the value of the work:—

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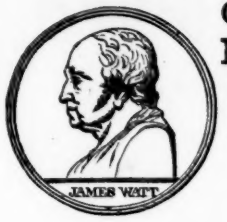
"Such a work, well understood by miners, would do more to prevent colliery accidents than an army of inspectors."—*Colliery Guardian.*

London: MINING JOURNAL Office, 26, Fleet-street; and to be had of all book sellers.

BUYERS are CAUTIONED against Purchasing any Infringements of H.R.M.'s Numerous PATENTS.



Ore Crushers, H.R.M.'s New Patent Crushing Jaw EXTENSIVELY USED BY MINE OWNERS.

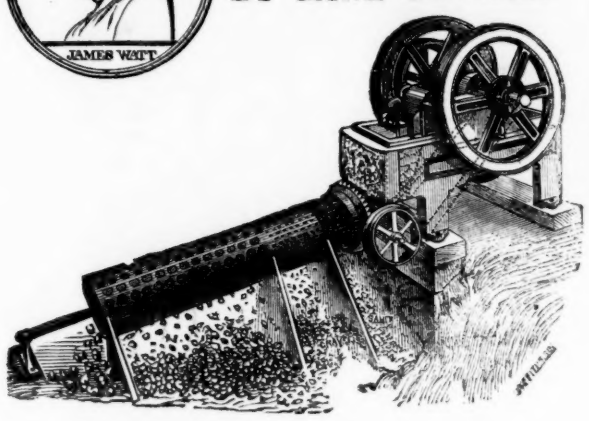
H.R. MARSDEN, LEEDS,

ENGINEER.

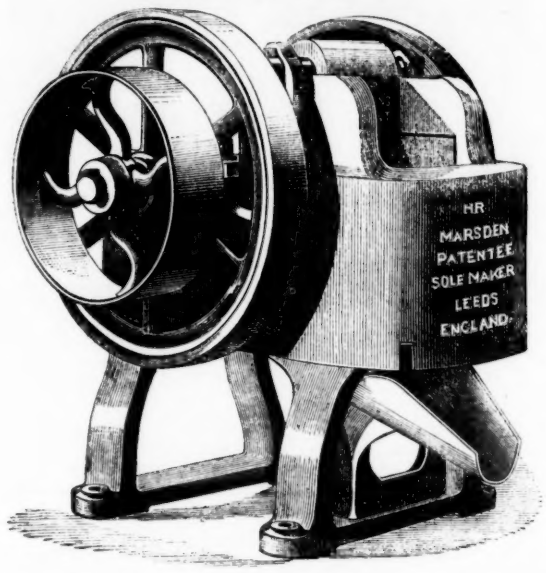
Mining Improvements

Revolving Picking Table.

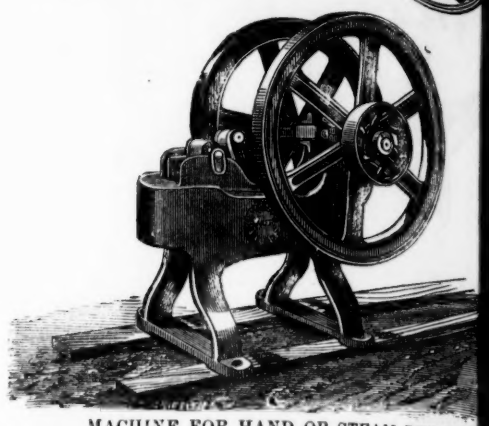
1150 NOW IN USE.



FIXED MACHINE AND SCREEN,
Specially designed and largely used for
rushing Pyrites, Limestone, Cement, Coal, Rocks, &c.,
AT ALL THE PRINCIPAL WORKS IN THE KINGDOM.
Takes in 20 in. by 9 in., and is shown by TESTIMONIALS to be breaking from 1000 to 1200 tons per day of 10 hours, at
THREE HALF-PENCE PER TON.
FEW WORKING PARTS.
SMALL WEAR AND TEAR.
FREEDOM FROM BREAKAGE.



"The Machine is well designed, simple, but substantially made and is capable of reducing any material to fine gravel, such as copper ore, and is certainly preferable to the stamps in use for that purpose."—*Mining Journal.*



MACHINE FOR HAND OR STEAM POWER.
For making gravel for gentlemen's walks in parks and garden
for grinding emery, flints, fossils, &c., for pulverising silver, c
and other ores; also gold quartz, and especially useful to ch
and metallurgists for sampling, as it is capable of pulverisi
hardest material, and can be turned by one man with ea
REFERENCES TO ALL PARTS OF THE WORLD.
SIMPLICITY OF CONSTRUCTION. EXCELLENCE OF SA
ECONOMY OF POWER

THESE STONE BREAKERS AND ORE CRUSHERS ARE UNIVERSALLY PRONOUNCED THE ONLY PERFECT SUCCESS.

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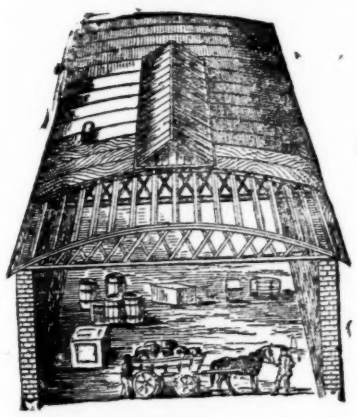
Sole Maker & Patentee, H. R. MARSDEN, SOHO FOUNDRY, LEEDS, ENGLAN

M'TEAR AND CO.'S CIRCULAR FELT ROOFING,



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GREAT ECONOMY
AND
CLEAR WIDE SPACE.

For particulars, estimates and plans, address,—
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ST. BENET CHAMBERS,
FENCHURCH STREET,
LONDON, E.C.;
4, PORTLAND STREET,
MANCHESTER;
OR
CORPORATION STREET,
BELFAST.

The above drawing shows the construction of this cheap and handsome roof, now much used for covering factories, stores, sheds farm buildings, &c., the principal of which are double bow and string girders of best pine timber, sheeted with ½ in. boards, supported on the girders by purlins running longitudinally, the whole being covered with patent waterproof roofing felt. These roofs so combine lightness with strength that they can be constructed up to 100 ft. span without centre supports, thus not only affording a clear wide space, but effecting a great saving both in the cost of roof and uprights.

They can be made with or without top-lights, ventilators, &c. Felt roofs of any description executed in accordance with plans. Prices for plain roofs from 30s. to 60s. per square, according to span, size, and situation.

Manufacturers of PATENT FELTED SHEATHING, for covering ships' bottoms under copper or zinc.

DRY HAIR FELT, for deadening sound and for covering steam pipes, thereby saving 25 per cent. in fuel by preventing the radiation of heat.

PATENT ASPHALTE ROOFING FELT, price 1d. per square foot.

Wholesale buyers and exporters allowed liberal discounts.

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By a special method of preparation, this leather is made solid, perfectly close in texture, and impermeable to water; it has, therefore, all the qualifications essential for pump buckets, and is the most durable material of which they can be made. It may be had of all dealers in leather, and of—

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Prize Medals, 1851, 1855, 1862, for
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Reduced prices of this Rock Drill (formerly called "Kainotomon"), Nos. 1 and 2, £32 and £34, SUBJECT TO DISCOUNT.

IMPROVED AIR COMPRESSORS.

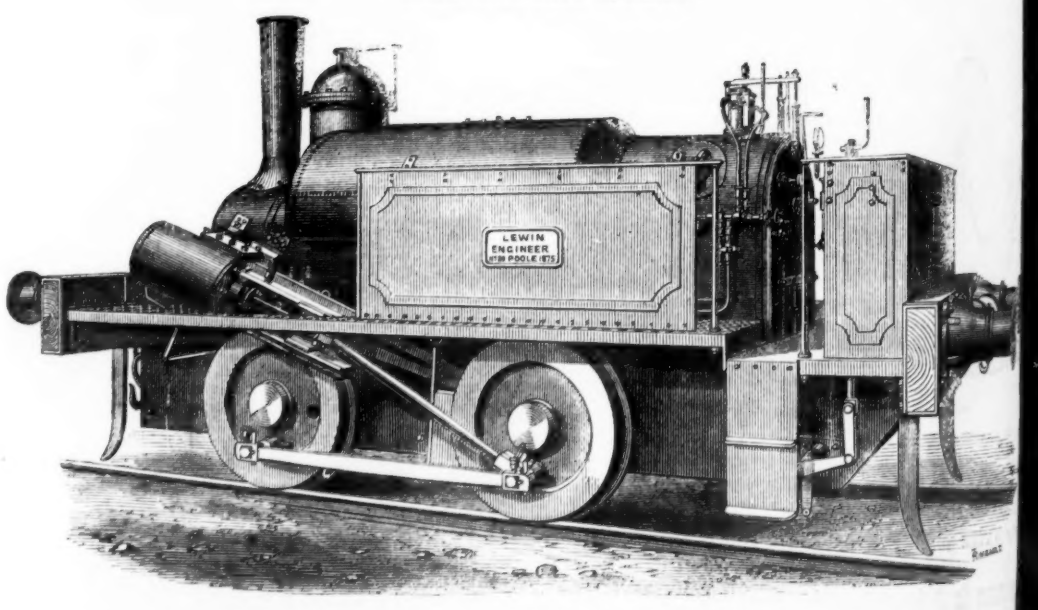
Makers of Pumping and Winding Engines, Steam Hammers, Boilers, Pump Pipes, &c., &c. Castings of all kinds.

BRYDON AND DAVIDSON, ENGINEERS,
WHITEHAVEN.

LEWIN, POOLE, DORSET.

Speciality in cheap colliery and contractors' Locomotives, and very small Locomotives for replacing Horses.

Prices from £300 upwards.



PORTABLE FIXED AND VERTICAL ENGINES

WINDING AND PUMPING GEAR.

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STREET AND ROAD TRAMWAY LOCOMOTIVES,

ON THE MOST IMPROVED PRINCIPLE.

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